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THE TREATMENT OF ECLAMPSIA

CHAIRMAN'S ADDRESS

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Eclampsia is still a major problem in obstetrics. In the time at my disposal I propose to discuss its treatment. I shall limit myself to cases of actual puerperal convulsions. Not that eclampsia without convulsions or preeclampsia is not as important or as dangerous. In the first place the convulsive type is more clear cut and there is scarcely any question of diagnosis. In the second place the therapeutic problem is different. When convulsions are present, one naturally has an urge to energetic treatment which is egged on by the patient's relatives and friends. One simply has got to do something. In preeclampsia, on the other hand, it is frequently hard to make the patient realize that she is seriously ill, and one has to overcome her resistance to treatment of any sort.

Treatment naturally divides itself into two parts (1) preventive and (2) curative. In no disease is the old adage that "an ounce of prevention is worth a pound of cure" more true than with eclampsia. With good antepartum care one can in the vast majority of cases recognize the premonitory signs and symptoms in time to avoid convulsive seizures. A rise in blood pressure or an unusual gain in weight is a warning that treatment should begin. If the patient does not improve with rest in bed, a milk diet and possibly the exhibition of calcium by mouth or intravenously, or, if albuminuria appears, the uterus should be emptied. A patient who carries a hypertension for three weeks is apt to have permanent damage.

Whereas there is a general unanimity of opinion with regard to the preventive treatment, when one comes to curative treatment of eclampsia that is another matter. I was taught that, as the cause of eclampsia was in some way connected with the presence of the fetus, the proper treatment was to terminate the pregnancy as quickly as possible. By getting rid of the cause, one cured the disease. The standard method was accouchement force, which was later supplanted by cesarean section. This method was so standardized that I followed it blindly for years. When I counted up my results I was surprised to find that I had lost 31.6 per cent of the mothers. I then went through the era of morphine, colonic irrigation and gastric lavage, with a maternal mortality of 25.9 per cent. The first effective means of controlling convulsions was magnesium sulfate given intravenously. Its use tremendously simplified the treatment of this condition. Since the appearance of Lazard's article in 1925, I have

treated 129 consecutive cases of eclampsia with a maternal mortality of 4.65 per cent. It is to the treatment of these 129 cases that I want particularly to direct attention.

Of the 129 patients, seventy were white and fifty-nine were colored. The ages varied from 12 years to 40 years, the average being 23.7 years. Eight white patients were unmarried and twenty-five of the Negroes were unmarried. There were fifty white primiparas and forty-four colored primiparas, a total of ninety-four primiparas, or 73 per cent.

No attempt was made to classify the convulsions into antepartum, intrapartum or postpartum for the reason that in many cases no adequate history could be obtained. Many patients were brought into the hospital in coma or convulsions by the ambulance and no one seemed to know much about the case. For the same reason I have not been able to classify all the cases according to their severity. The total number of convulsions in many cases is unknown. At least forty-one cases were severe according to Eden's classification. There were six maternal deaths, five of which occurred in the severe type. These deaths were discussed in a previous paper.¹ Briefly, two cases, 10 and 15 of my series, were treated with morphine and high colonic irrigations. One mother died of pneumonia on the fourteenth day after a spontaneous delivery. She had antepartum convulsions, which were easily controlled with magnesium sulfate intravenously. The fourth case was also a septic death. The patient was delivered by cesarean section after a trial labor of fifty-two hours, several days after the convulsions were stopped. She died of peritonitis on the third day. The fifth maternal death was that of an epileptic with superimposed puerperal convulsions. I was unable to control the convulsions, and the patient died undelivered ten hours after admission to the hospital. The last maternal death was of a patient who was admitted to the hospital in May 1929. She had had twelve convulsions before she was put to bed in the hospital. Magnesium sulfate intravenously failed to stop the convulsions. The spinal fluid was cloudy and under a pressure of 240 mm of water. I delivered her of a stillborn baby by version under spinal anesthesia. The patient continued to have convulsions and died two and a half hours after delivery. Three mothers had twins. Stroganoff² in a recent paper reported a high maternal mortality in twin cases treated with magnesium sulfate. This is contrary to my experience. All three mothers, as well as the six babies, recovered. In eleven cases of mothers brought into the hospital after the baby was born, there is no record of the baby. Sixty-five babies left the hospital alive and fifty-six babies were lost, a fetal mortality of 46.6 per cent.

Read before the Section on Obstetrics Gynecology and Abdominal Surgery at the Eighty Eighth Annual Session of the American Medical Association Atlantic City N J June 10 1937

1 Rucker M P Virginia M Monthly 61 384 (Oct.) 1934
2 Stroganoff W and Davidovitch O J Obst & Gynec Brit Emp 44 289 (April) 1937

In the group of severe eclampsia there was one set of twins and two babies whose outcome was not recorded. Twenty-four babies in this group were lost and sixteen left the hospital alive, a fetal mortality of 60 per cent. Even more striking is the fetal loss in the cases in which the maternal systolic blood pressure went over 200 mm of mercury, whether they had any of the other stigmas of severe eclampsia or not. There were twenty-three such cases with fifteen fetal deaths, six live babies and two unrecorded, a fetal mortality of over 71 per cent.

TREATMENT

In the treatment of these cases, I have not followed slavishly a routine but have been guided by certain principles. Mine consist of four: (1) stopping the convulsions, (2) good nursing care with emphasis on rest, (3) promoting kidney activity, and (4) digitalis.

Magnesium sulfate intravenously has been remarkably efficient in stopping convulsions. My initial dose is 20 cc of a 10 per cent solution. Frequently I have given a second dose of 15 cc and occasionally a third dose of 15 cc. In a few cases I have used $7\frac{1}{2}$ grains (0.5 Gm) of sodium amytal intravenously. I prefer the magnesium sulfate to the sodium amytal, because the former wakes the patient up when it stops the convulsions and the latter puts her to sleep. In such an event it is hard then to know whether the patient is comatose or simply drugged. Nevertheless, sodium amytal is a drug to have around, because occasionally one drug will control the convulsions when the other will not.

Under the head of good nursing care comes the avoidance of external stimuli, such as bright light, noises and jarring the bed. The patient should be kept on her side to lessen the chance of aspirating vomitus and other fluids in the mouth. The tongue should be protected during the clonic stage of a convulsion, and the nurse should be prepared to give artificial respiration if it should be necessary. Too much emphasis cannot be placed on rest. For this reason I am opposed to colonic irrigations, gastric lavage and purgatives. These patients are desperately ill and need all the rest they can get.

I feel very much better when the patient is putting out a good quantity of urine. Usually I rely on water or cream of tartar lemonade to promote kidney activity. The best way to give fluids to an eclamptic patient is by the stomach. If the patient is not awake enough to drink, one can slip a nasal tube into the stomach and pour in a pint of fluid every eight hours. When there is anuria or marked oliguria I resort to dextrose intravenously, varying the strength according to whether there is much or little edema present.

Digitalis has a definite place in the treatment of eclampsia. I give half a cat unit dose as soon as possible after I have given the magnesium sulfate or sodium amytal. I have never seen edema of the lungs when digitalis has been given. In this connection the recent report of Ware and Noblin³ is especially interesting, as a large part of my series is composed of patients treated at St. Philip's and Memorial Hospital immediately prior to the time covered in their report. In 1931 and 1932 when they used morphine, bromide and chloral their mortality was 25.53 per cent. In 1933, 1934 and 1935 they used magnesium sulfate, dextrose and digitalis and their mortality dropped to 6.88 per cent. Dr. Ware tells me that in 1935 and 1936 he

treated thirty-seven eclamptic patients with only one maternal death. In other words, at the Medical College of Virginia Hospitals I was treating eclampsia with magnesium sulfate, rest and digitalis, with a maternal mortality of 5 per cent. The treatment was then changed to morphine, bromides and chloral and colonic irrigations and the mortality rose to 25 per cent. The treatment was then changed back to practically the same as before and the mortality dropped to practically the same figure.

I have said nothing about delivery or terminating pregnancy, for the reason that I believe it has no place in the treatment of eclampsia. The patients who go into labor should be treated as conservatively as possible, which means in most cases episiotomy and low forceps under local anesthesia. When antepartum eclampsia is relieved and the patient is putting out a good quantity of urine, then comes up the question of terminating pregnancy. Unless one has exceptionally good control of the patient, it is unwise to let the patient leave the hospital undelivered. No eclamptic or recent eclamptic patient should have a general anesthetic.

SUMMARY

A series of 129 consecutive cases of eclampsia have been treated with an uncorrected maternal mortality of 4.65 per cent. The guiding principles in the treatment of these patients have been (1) stopping the convulsions with intravenous magnesium sulfate or sodium amytal, (2) the greatest possible amount of rest, (3) promoting kidney activity with fluids by mouth or dextrose solution intravenously, and (4) adequate dosage of digitalis.

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ACTIVE IMMUNIZATION OF TUBERCULOUS CHILDREN AGAINST WHOOPING COUGH WITH SAUER'S VACCINE

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Shortly after Sauer's early reports of his success in the prevention of whooping cough with doses of 80 billion bacilli of an unwashed vaccine prepared from freshly isolated strains of *Haemophilus pertussis*, it was decided to test the effectiveness of the vaccine at Sea View Hospital under adequate control conditions.

At Sea View Hospital tuberculous persons of all ages are admitted from hospitals and homes of New York City and hospitalized for the duration of their illness. In the pediatrics service there are almost 200 patients under 16 years of age with tuberculosis or suspected of having tuberculosis. The average duration of hospitalization for the tuberculous children is about two years. Newly admitted children are kept in the pediatrics admitting ward for several weeks and are then transferred to one of the other wards. For those over 6 years of age there is a separate ward for boys and girls. They intermingle in the hospital school. For the children under 6 years of age there is one ward for infants, boys under 3 years and girls under 6 years of age, and another ward for boys between the ages of 3 and 6 years. These younger children remain in their respective wards throughout the day. They are in

From the Pediatrics Service of Dr. Bela Schick, Sea View Hospital, Staten Island.

intimate contact with one another but do not mingle with children in other wards. Those with positive sputum are separated from the others in each ward. In addition there is a ward for those with bone tuberculosis and a small ward for normal infants vaccinated with BCG. Visitors are allowed daily between 3 and 5 p. m. Children are not permitted to visit the wards.

Since several cases of whooping cough occurred among our younger children in 1931 and in 1934, we felt that there might be another outbreak in two or three years. This would give us the opportunity to test the effectiveness of Sauer's vaccine under known conditions of prolonged and intimate exposure during the catarrhal stages of the disease before the diagnosis is made and when the disease is most contagious, and to compare the outcome among vaccinated and non-vaccinated children living under similar conditions of exposure.

Unfortunately it is difficult to obtain comparable conditions in respect to exposure among vaccinated and control children in studies among children in the general population. In such studies it is particularly difficult to evaluate the degree of exposure among children under investigation unless familial exposure occurs. When there is no familial exposure, it is possible to follow up large groups of children for long periods of time without finding a single undoubted exposure. In cases in which extrafamilial exposure is reported, it is often difficult to determine the degree of the exposure or to be certain that the disease was in its communicable phase when contact took place, even though whooping occurred at the time. It is common knowledge that the infectivity of whooping cough diminishes with the duration of the disease and that a paroxysmal cough can be observed long after the disease has ceased to be infectious. Because of this, reports of extrafamilial exposure not only lose much of their significance as tests of the effectiveness of the vaccine but also can be highly misleading.

Since the degree of exposure varies considerably among the children in a study, and since many children never develop recognizable symptoms of whooping cough, it is obviously essential to choose systematically during the periods of vaccination an adequate number of unvaccinated children as controls if the truth is to be learned about the value of vaccines in whooping cough prophylaxis. This need for adequate controls in the study of whooping cough prophylaxis is well illustrated by the reports of from fifteen to twenty years ago. At that time, when there were no controls, protection was reported in from 90 to 100 per cent of the children¹ to whom doses varying from 50 million to "large" doses of $3\frac{1}{2}$ billion bacilli were administered. When controls were used,² the vaccine was found to have little or no prophylactic value.

Similarly, no complete prophylactic value was reported by Madsen³ in 1925 and 1933 in epidemics in the Faroe Islands in which doses of 22 billion bacilli

were employed. However, Madsen stressed the fact that the disease was milder and of shorter duration among the vaccinated and that the mortality in the vaccinated group was "one sixteenth of that in the nonvaccinated group." Sauer's⁴ reports since 1933 as to the prophylactic value of 80 billion bacilli seem convincing, except for the fact that he does not fully discuss his results in an adequate number of control children. The same criticism holds for the reports by others who have thus far published favorable results with his vaccine.⁵ This is unfortunate and detracts from the value of their work. Of significance in this respect is not only the experience of twenty years ago, as already mentioned, but particularly the recently published work of Doull, Shibley and McClelland.⁶ These investigators found that their whooping cough vaccine prepared of recently isolated strains and administered in a dose of 80 billion bacilli had virtually no prophylactic value, for they had almost as many occurrences among their vaccinated children three months or more after vaccination as among their control children. Their impression was that the disease tended to be milder among the vaccinated children.

In our study at Sea View Hospital we limited ourselves to a small group of children who were known to have had no past history of whooping cough. Approximately half of this group were given the

TABLE 1—Time of Vaccination

	Children
August 1934	30
March 1935	29
July 1935	20
December 1935	14
April 1936	8
Total	101

vaccine and the remainder were considered as unvaccinated controls. The vaccinations were begun in August 1934. The children received Sauer's authorized commercial vaccine in the recommended dose of 80 billion bacilli administered subcutaneously. The required dose of 8 cc was given in three successive weeks in divided amounts of 2, 3 and 3 cc as advised by Sauer. The vaccine was sent to us on the suggestion of Dr. Sauer. It had to be assumed that this vaccine authorized by Sauer fulfilled all the requirements established by him.

In an effort to maintain an approximately equal number of vaccinated children and unvaccinated controls of similar ages in each ward at all times, suitable children were selected for vaccination at varying intervals between August 1934 and April 1936,⁸ shown in table 1. About two thirds of the vaccinated children were under 6 years of age, the average age for the entire group at the time of vaccination was 31 years. There were eighty-two children designated as controls. Their average age was 27 years.

1 Bogert F V. Experience with Vaccine in the Prevention of Whooping Cough. *Am J Dis Child* 15: 271 (April) 1918. von Bokay Z. Keuchhustenprophylaxe mit Auto-Gruppenvakzine. *Jahrb f Kinderh* 106: 301 (Aug.) 1924. Goler G W. Whooping Cough Is Prevented by Vaccination. *New York State J Med* 17: 411 (Sept.) 1917. Luttenger Paul. Whooping Cough—Its Treatment and Prophylaxis Based on the Bordet Gengou Etiology. *New York M J* 101: 1043. 1915. Pertussis Vaccine—Its Value as a Curative and Prophylactic Agent in Whooping Cough. *J A M A* 68: 1461 (May 19) 1917.

2 Hess A F. The Use of a Series of Vaccines in the Prophylaxis and Treatment of an Epidemic of Pertussis. *J A M A* 63: 1007 (Sept 19) 1914. von Sholly Anna I. Blum Julius and Smith Lucella. Therapeutic Value of Pertussis Vaccine in Whooping Cough. *ibid* 68: 1451 (May 19) 1917.

3 Madsen Thorvald. Whooping Cough—Its Bacteriology, Diagnosis, Prevention and Treatment. Boston M & S J 192: 50 (Jan 8) 1925. Vaccination Against Whooping Cough. *J A M A* 101: 187 (July 15) 1933.

4 Sauer Louis. Whooping Cough a Study in Immunization. *J A M A* 100: 239 (June 28) 1933. Immunization with Bacillus Pertussis Vaccine. *ibid* 101: 1449 (Nov 4) 1933. The Known and Unknown of Bacillus Pertussis Vaccine. *Am J Pub Health* 25: 1226 (Nov.) 1935.

5 Quillian W W. Immunization Against Contagious Diseases of Childhood. *J Florida M A* 22: 407 (March) 1936. Daughtry Denmark Leila. Studies in Whooping Cough Diagnosis and Immunization. *Am J Dis Child* 52: 587 (Sept.) 1936. Sibelski C E. Contribution to Whooping Cough Immunization. *Illinois M J* 68: 549 (Dec.) 1935. Reading Boyd. Immunization with Pertussis Vaccine. *Texas State J Med* 31: 213 (July) 1935. McFarland G B. The Prevention and Treatment of Whooping Cough. *Texas State J Med* 32: 219 (July) 1936.

6 Doull J A. Shibley G S and McClelland J E. Active Immunization Against Whooping Cough. *Am J Pub Health* 26: 1097 (Nov.) 1936.

7 Eli Lilly & Co. supplied the vaccine.

8 Dr. Bella Singer and Dr. Jeanne E. Shore aided in the administration of the vaccine.

Vaccinations were not given after April 1936, because an outbreak of whooping cough occurred during the late spring and early summer. The first case was diagnosed May 15 in a child, aged 3½ years, who was admitted May 1. The last case was recognized August 19. The duration of the epidemic period was about three and a half months. During this period there were twenty-seven occurrences of whooping cough in an exposed group of sixty-four children (42.1 per cent), 6 years of age or less. The high attack rate was expected, for the children were largely runabouts in close contact with one another during the day and exposed during the catarrhal stage when the disease is most communicable. Isolation was instituted in individual cases when symptoms suggestive of whooping cough were noticed. In all, thirty-three children were isolated. The characteristic whoop and lymphocytosis developed in twenty-seven children. These were considered as undoubted cases of whooping cough. Five other children had lymphocytosis and cough but no whoop. Since cough plate cultures were not made, the cases were considered as probable whooping cough. The remaining child had a cough which was associated with an exacerbation of his tuberculosis. Since there was no change in the lymphocytic ratio, he was not considered as having whooping cough.

TABLE 2—Age Distribution

Age in Years	Vaccinated Children	Controls
1	2	7
2	4	6
3	2	2
4	4	2
5	2	0
6	3	2
Total	17	19

For purposes of study, a grouping of the sixty-four exposed children showed that there were sixteen children with a past history of whooping cough, twelve children with a questionable history of whooping cough, and thirty-six children with no past occurrence of whooping cough.

Only the thirty-six children who were known to have had no past history of whooping cough were included in our study. The remaining twenty-eight children were excluded from our study because they had had whooping cough or their past history of whooping cough was either questionable or unobtainable.

There were seventeen vaccinated and nineteen control children among the thirty-six exposed children under consideration. There were fourteen boys and three girls in the vaccinated group and twelve boys and seven girls in the control group. The ages varied from 1 to 6 years. The average age for the vaccinated children at the time of vaccination was 2.8 years. At the onset of the epidemic the average age was 4.2 years for the vaccinated and 2.3 years for the nonvaccinated children. The age distribution in both groups at this time is given in table 2. The majority of the control children were less than 3 years of age, while the majority of the vaccinated children were 3 years of age or older.

The nature of the tuberculous lesion was quite similar in the two groups. There were eleven vaccinated and twelve control children with primary pulmonary tuberculosis, three vaccinated and two control children with hilar lymph node tuberculosis, one vaccinated and two control children with destructive pulmonary tuberculosis and one child in each group with tuberculous pleurisy with effusion. In addition,

one control child had miliary tuberculosis, and another had Still's disease, and one vaccinated child was a normal infant who had received BCG vaccination about six months prior to the whooping cough vaccination.

There were five characteristic cases of whooping cough among the seventeen exposed vaccinated children (29 per cent)⁹ and ten among the nineteen exposed control children (53 per cent). In all of these fifteen occurrences a paroxysmal cough, whoop and lymphocytosis were present.

As already mentioned, five other children in this group of thirty-six had a lymphocytosis and cough but no whoop. In the absence of cough plate cultures it was thought permissible to consider them as probable cases of whooping cough. They probably had an abortive form of the disease, which is not at all uncommon. Four of these children were vaccinated (24 per cent) and one was a control child (5 per cent). If characteristic and probable cases of whooping cough are combined, there were nine cases among the seventeen vaccinated children (53 per cent) and eleven among the nineteen control children (58 per cent). The clinical data relative to these twenty cases are shown in table 3.

The five vaccinated children in whom characteristic symptoms of whooping cough developed were from 2 to 3½ years of age at the time of vaccination. Their average age at the time of onset of whooping cough was 4 years, as compared with 2.5 years in the control group. The time interval between the completion of vaccination and the onset of symptoms of whooping cough was three months in one case, twelve months in three cases and sixteen months in another case. The types of tuberculous lesions in these five cases were primary pulmonary tuberculosis (three cases), hilar lymph node tuberculosis (one case) and destructive pulmonary lesion (one case). The attack of whooping cough seemed to have no apparent ill effect on the pulmonary tuberculosis in any of these cases.

The ten nonvaccinated control children in whom characteristic symptoms of whooping cough developed varied in age from 1 to 4 years, their average age at the onset of symptoms was 2.5 years. The types of tuberculous lesions in these ten cases were primary pulmonary tuberculosis (six cases), destructive pulmonary lesion (two cases), hilar lymph node involvement (one case) and miliary tuberculosis with extensive pulmonary tuberculosis (one case). The attack of whooping cough seemed to have no apparent ill effect on the pulmonary tuberculosis in any of these control cases except for one case (table 3, case 6), in which the development of whooping cough might have hastened the death of the child.

Among the five children who have been grouped separately as probably having whooping cough, there were four vaccinated children and one control child. Three of the four vaccinated children were less than 2 years old at the time of vaccination. All the vaccinations were given in December 1935, about seven months before the onset of symptoms.

An accurate evaluation of the severity of whooping cough in the group of children with characteristic symptoms is quite difficult. The disease was mild in most of the children. It was of moderate severity in one vaccinated child (case 1) and in several control children (cases 8, 9, 10 and 11). One control child (case 6) died of miliary tuberculosis and extensive

⁹ Since the totals are small the calculation of percentage is only a rough estimate.

pulmonary tuberculosis, which antedated the onset of whooping cough. In view of his extensive tuberculosis it was impossible to determine accurately the severity of the whooping cough or the effect on the tuberculous process.

In two of the children who were vaccinated the disease was very mild (cases 2 and 3). The average duration of the whoop was twenty-one days among the vaccinated children, as compared with thirty-two and a half days among the controls.

The average number of days during which the whoop was considered severe was two and eight-tenths days among the vaccinated as compared with seven and a half days among the controls. The disease, therefore, seemed somewhat milder among the vaccinated children.

Furthermore, there were fourteen vaccinated and twenty-four nonvaccinated control children over 6 years of age in the hospital during the epidemic, but they were not exposed to the disease. There were obviously no occurrences in this group, and they can be omitted from our discussion.

In addition, seventy vaccinated children and thirty-nine nonvaccinated control children had been discharged from the hospital before the onset of the epidemic. We succeeded in locating forty-six vaccinated children and twenty-two nonvaccinated controls. Of these, there were no known exposures to whooping cough and only one occurrence. In a nonvaccinated child whooping cough developed in September 1936, at the age of $3\frac{1}{3}$ years, six months after his discharge.

TABLE 3—Clinical Data Relative to Twenty Children with Characteristic and Probable Whooping Cough

Case	Name	Age*	Sex	Type of Pulmonary Tuberculosis	Date of Vaccination	Date of Onset of Symptoms	Interval Between Vaccination and Onset (In Mo.)	Duration of Whoop (In Days)	Days Whoop Was Severe	Total White Count	Lymphocytosis per Cent	Comment
A Children with Characteristic Whoop (Undoubted Cases of Whooping Cough)												
1	O A	(2) 3	♂	Primary	7/35	7/ 7/36	12	46	10	41,200	56	
2	V C	(3 $\frac{1}{2}$) 1	♀	Primary	4/36	7/29/36	3	11	0	9,200	82	
3	E H	(3 $\frac{1}{2}$) 1	♂	Hilar	3/35	7/30/36	16	5	0	Not examined		
4	W G	(3 $\frac{1}{2}$) 1	♂	Destructive	7/35	7/30/36	12	20	4	Not examined		
5	R T	(3 $\frac{1}{2}$) 1	♂	Primary	7/35	7/28/36	12	24	0	13,100	47	
6	J P	1 $\frac{1}{2}$	♂	Miliary	Control	7/28/36		28 ?	5 ?	60,400	63	Died of tuberculosis
7	J B	1 $\frac{1}{2}$	♂	Primary	Control	7/ 1/36		18	4	10,000	65	
8	R F	1 $\frac{1}{2}$	♂	Hilar	Control	7/ 7/36		43	15	15,200	62	
9	A G	2 $\frac{1}{2}$	♂	Primary	Control	7/20/36		27	11	20,900	75	
10	D T	2 $\frac{1}{2}$	♂	Primary	Control	7/ 1/36		51	10	12,300	68	
11	M M	2 $\frac{1}{2}$	♂	Primary	Control	6/18/36		37	17	30,000	67	
12	J N	2 $\frac{1}{2}$	♂	Primary	Control	7/29/36		29	3	11,200	60	
13	L J	2 $\frac{1}{2}$	♂	Primary	Control	8/11/36		42	5	Record lost		Exacerbation of sinusitis
14	W G	4	♂	Destructive	Control	8/19/36		26	3	21,600	70	
15	A F	4 $\frac{1}{2}$	♂	Destructive	Control	7/28/36		24	2	38,600	56	
B Children with Cough and Lymphocytosis but no Whoop (Probable Cases of Whooping Cough)												
16	C D	(1 $\frac{10}{1}$) 1	♂	Primary	12/35	7/28/36	7	0	0	17,400	61	Coughed 14 days
17	J O	(1 $\frac{10}{1}$) 1	♂	Hilar	12/35	8/19/36	8	0	0	17,350	61	Coughed 11 days
18	E C	(1 $\frac{10}{1}$) 1	♀	Primary	12/35	7/ 7/36	7	0	0	14,450	67	Coughed 7 days
19	P C	(3 $\frac{1}{2}$) 1	♂	Primary	12/35	7/26/36	7	0	0	14,200	64	Duration of cough unknown
20	R G	2 $\frac{1}{2}$	♂	Primary	Control	8/21/36		0	0	10,450	59	Duration of cough unknown

* Refers to the age in years at the onset of symptoms. The numbers in parenthesis refer to the age at the time of vaccination.

than it did among the controls. The age of the children might have been a factor here, for all the vaccinated children in this group were 3 years of age or older, while eight of the ten control children were less than 3 years of age.

Twenty-eight exposed children were excluded from the study because they had had a past history of whooping cough (sixteen children) or because their past history of whooping cough was doubtful or not obtainable (twelve children). Their ages varied from 1 to 6 years, the average being $4\frac{1}{2}$ years. There were eleven occurrences of typical whooping cough among these twenty-eight children (39 per cent). Five occurrences were among the sixteen children (31 per cent) with a past history of whooping cough. We do not know whether these cases are recurrences, for we are often doubtful of the diagnosis of whooping cough in the past history of our tuberculous children, because the paroxysmal cough of tuberculosis is frequently mistaken for whooping cough. There were six occurrences among the twelve children (50 per cent) in whom the past history of whooping cough was doubtful. The disease was mild in most instances. There were no complications.

from the hospital. Little significance can be attributed to the absence of whooping cough in the discharged vaccinated group of children because there was no known exposure.

COMMENT

The relatively high incidence of whooping cough among our vaccinated children exposed to whooping cough in the wards might be due to (1) the presence of active tuberculosis in the vaccinated children, (2) the presence of a particularly virulent micro-organism or (3) the ineffectiveness of the vaccine in whooping cough prophylaxis.

There is at present no evidence to support the view that the presence of tuberculosis per se diminishes the effectiveness of whooping cough vaccines. Since there are no simple, reliable tests of immunity to whooping cough, the relationship of tuberculosis to whooping cough immunization remains obscure. By means of serologic tests it was found that tuberculous children under our observation responded to the whooping cough vaccine much like normal children. The complement fixation test¹⁰ was strongly positive one week

10. The serologic tests in these cases were performed by Dr. Manfred Weichsel of the Department of Bacteriology, New York University Medical College.

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after completion of vaccination and remained positive in tests done one month after the last dose of vaccine. These results are comparable to those obtained in normal children and indicate that the vaccine readily stimulated the formation of specific antibodies in our tuberculous children. Furthermore, in our vaccinations against a disease such as diphtheria, the results of which can be well controlled by a simple skin test, we have had no difficulty in immunizing our tuberculous children with diphtheria toxin-antitoxin or with toxoid, as determined by the conversion of a Schick positive reactor to a Schick negative reactor.

Another possibility in explanation of the failure of the vaccine is the presence of an unusually virulent micro-organism during the epidemic. There seems to be no evidence in support of this view. The disease was mild in most of the children. There were no complications and no deaths due to a severe attack of whooping cough.

It seems that the attack rate was high not so much because of the presence of tuberculosis or of an unusually virulent micro-organism but because of the high degree of exposure of incompletely protected children. This is seen in other acute infectious diseases. In measles, for example, Karelitz and Schick¹¹ pointed out the increased difficulty of protecting children under conditions of intensive exposure and the consequent need for larger doses of immune serum. Under the conditions of exposure that prevailed at the hospital, the authorized commercial vaccine in a dose of 80 billion bacilli was ineffective in preventing the development of symptoms. However, although the vaccine did not prevent the development of symptoms, it seemed to be of some value, because the symptoms were, on the whole, less severe and of shorter duration among the vaccinated children than among the nonvaccinated children used as controls.

In this discussion we have omitted the question of the duration of immunity after vaccination. In our

In a group of seventeen vaccinated and nineteen nonvaccinated tuberculous children intimately exposed in the hospital during the catarrhal stage of whooping cough, characteristic whooping cough developed in five (29 per cent) of the vaccinated children and in ten (53 per cent) of the nonvaccinated controls, while lymphocytosis and cough, but no whoop, occurred in four (24 per cent) of the vaccinated children and in one (5 per cent) of the control children (table 4). There were eight children without symptoms in the vaccinated group (47 per cent) and an equal number in the control group (42 per cent).

CONCLUSION

1. Sauer's authorized commercial vaccine, in a dose of 80 billion bacilli, did not seem to prevent the development of symptoms in a group of vaccinated tuberculous children exposed to whooping cough at Sea View Hospital.
2. The symptoms seemed, on the whole, to be milder and of shorter duration among the vaccinated children than among the nonvaccinated children used as controls.
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NURTURING A NATIONAL NEUROSIS

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In this supposedly modern age of psychiatry it is indeed inconsistent and somewhat startling to find that the government of an enlightened country is foisting upon its citizens a state akin to a national neurosis. Reference is made to the manner in which the Veterans' Administration disposes of those individuals who come under its jurisdiction with ills that might be included under the heading of psychoneurosis.

We are uninformed whether or not a somewhat comparable situation developed, psychiatrically speaking, after previous campaigns involving this country. There is no reason to believe that such was not the case, but that the neuroses were encouraged and provided with such fertility in which to develop as they were after the World War is unlikely. It is probable that no precedent was set for the psychiatric confusion in which the Veterans' Administration now finds itself. The experience of other governments with this problem should not have been overlooked, for they had had three years of war behind them when the United States became involved, and their physicians had been stimulated thereby to numerous publications on such subjects as "war neuroses," "soldier's heart," "shell fright"¹ and the like (see especially Hurst,² Mott³ and Marr⁴ and particularly the references contained in the first two works).

The authors served consecutively as neuropsychiatric specialists in the Cincinnati Regional Office of the Veterans Administration for a period of fifteen months.

1. It has been suggested that if men suffering from shell shock had been labeled originally "shell fright" and made to wear a badge there would be far fewer of them today. A physician with one of the Scottish regiments has stated that the medical men of this particular regiment did not recognize shell shock with the result that the incidence of men presenting themselves with the signs of shell shock was reduced to near zero.

2. Hurst, A. F. *The Psychology of the Special Senses and Their Functional Disorders*. London: Oxford University Press, 1920.

3. Mott, F. W. *War Neuroses and Shell Shock*. London: Oxford University Press, 1919.

4. Marr, H. C. *Psychoses of the War Including Neurasthenia and Shell Shock*. London: Oxford University Press, 1919.

TABLE 4—Results Among Vaccinated and Nonvaccinated Control Children Exposed to Whooping Cough at Sea View Hospital

	Number of Exposed Children in Study	Effects of Exposure to Whooping Cough							
		Children with Characteristic Whoop		Children with Cough and Lymphocytosis		Total Number of Children with Symptoms		Children Without Symptoms	
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Vaccinated children	17	5	29	4	24	9	53	8	47
Nonvaccinated children	19	10	53	1	5	11	58	8	42

opinion, this problem has not been adequately studied. It is important, because active immunity produced by bacterial vaccine is short lived. It is advised, for example, that typhoid vaccination be repeated every two years. The long lasting immunity that follows recovery from an attack of typhoid or whooping cough does not indicate that an immunity of equal duration will result after vaccination.

SUMMARY

From August 1934 to April 1935, 101 tuberculous children at Sea View Hospital were vaccinated with 80 billion bacilli of Sauer's authorized commercial vaccine.

11 Karelitz, Samuel, and Schick, Bela. *Epidemiologic Factors in Measles Prophylaxis*. J. A. M. A. 104: 991 (March 23) 1935.

It is difficult to believe that the government made practically no provision for the treatment of what was to be one of the most disabling of the illnesses arising out of the late war (table 1). This is especially noteworthy in light of the rise of psychiatry and the spread of psychotherapeutic technic into medical consciousness which occurred before the war. Possibly rules were made to cover (considering the political penchant for making rules), but they never reached fruition, they got no further than the rule books and so did nobody good except possibly those who drew a salary for spreading them on the records.

A veteran may present himself with appendicitis and have the appendix removed at the expense of the government years after he served in the army, and the same holds true for remedial measures directed against any of the physical ills that beset man.⁵ But let him present himself with a neurosis, be it mild or severe, and he is treated generally speaking by the methods in vogue a hundred years ago if at all. The attitude that permeates the veteran facilities as regards the neuroses is indeed a pitiful one and we believe has developed gradually for several reasons which will now be discussed.

In formulating the regulations for the compensation of disabilities arising from the World War, an omnipotent individual or group of individuals decided that all cases of psychoneurosis "of 10 per cent or more" originating within five years after the close of the war were "service connected," that is, the illness originated or was augmented as a direct result of service in the armed forces and therefore an individual so affected should be compensated.⁶ On the basis of this ruling it can be seen without too much thought that a veteran with a psychoneurotic disorder must be compensated regardless of when the disabling symptoms made their appearance. No one of us can remember any period of months in his life during which he was entirely free from "nervousness," and all of us should be able to produce reasonable affidavits (medical and lay) proving the fact. This becomes increasingly simple when one has numerous acquaintances and is handling implements of war. Disregarding the verbiage quoted and descending to sound psychiatry, all life experience contributes

to the psychic organization of the individual, and if a neurosis develops any time after serving in the forces, this service can be said to have contributed to the disorganization. There is no point in delving into the question of how much was contributed toward the psychoneurotic state by three months in an army camp or a year on the battle fields, or by school and occupational experiences for that matter. Despite the occult powers assumed by some psychiatrists (experts found wandering but still capable of speech⁷) it is doubted that the reasonable members of the order would be willing to be judged by a statement that a specific

TABLE 1—Examinations During One Year*

No neuropsychiatric disability	147	Cerebral thrombosis (disregarding cause)	14
Schizophrenia	25	Brain injury (old)	2
Psychoneurosis		Old subdural hemorrhage	1
Mild	33	Spinal cord injury	1
Moderate	100	Senility	13
Severe	34	Epilepsy (one post traumatic)	20
Anxiety state	5	Postencephalitic parkinsonism	5
Post trauma	5	Paralysis agitans	2
Mental deficiency		Multiple sclerosis	7
Not rated	13	Dystrophia myotonica	2
Low average intelligence	2	Amyotrophic lateral sclerosis	2
Moron	2	Diabetic neuritis	2
Imbecile	1	Multiple neuritis	4
Mental deficiency with psychosis	1	Migraine	3
Psychopathic personality (one alcohol one marijuana addict)	7	Adenoma of pituitary	2
Manic depressive psychosis	8	Adenoma of thyroid (nontoxic)	2
Malingering	1	Hyperthyroidism	2
Psychosis type undetermined	1	and one each of the following	
Toxic psychosis	1	slight hypertrophy of thyroid	
Senile neuralgia	10	subacute combined sclerosis	
(usually secondary to arthritis)		spastic paraplegia (cause undetermined)	
Nerve injury (trauma)	12	neurofibromatosis	
Acute alcoholism	1	optic atrophy of undetermined cause	
Chronic alcoholism	16	vasomotor signs (residuals of frost bite)	
Alcoholic psychosis	2	congenital cranial nerve palsies	
Triorthoresyl phosphate poisoning (jamaica ginger)	4	fixation of the cervical spine (Marie Strumpell)	
Central nervous system syphilis		peroneal muscular atrophy	
Unclassified	13	Memiere's syndrome	
Meningitis	1	brain tumor metastatic melanoma and dyspituitarism with multiple lipoma	
Dementia paralytica	9		
Tabes dorsalis	5		
Tabetic dementia paralytica	1		

* Results of 556 examinations performed from April 6 1936 to April 5 1937 by the neuropsychiatrist at the Cincinnati Regional office. These examinations were for compensation for insurance or for the purpose of referral to a hospital and do not include those patients seen as outpatients. They do include a few veterans of the Spanish American War. It will be noted that 43.3 per cent of all the cases showing a neuropsychiatric disorder were theoretically amenable to psychotherapy (those under the heading psychoneurosis). This figure compares with 35.7 per cent which is derived by tabulating for a three months period the diagnoses from other government facilities who forwarded their records to the Cincinnati Regional office for rating.

experience did or did not augment or originate the psychoneurosis. That the specific experience, regardless of what it was, did contribute there cannot be much doubt.

Continuing the fallacious reasoning noted in the first portion of the foregoing paragraph the Veterans' Administration decided that psychoneurotic individuals were divisible into three great groups, namely, severe, moderate and mild (and should be compensated accordingly), depending on the amount of social and industrial incapacity caused by the illness, disregarding the individual psychobiology. It is not difficult to see what this ruling connotes. This was a definite step toward fixing the neurosis, toward making certain that it would never be amenable to treatment, in fact, it was the one infallible manner in which the administrators could be sure that the illness would be progressive. If the monetary reward is the greater the more severe the neurosis, what has the psychiatrist to offer in comparison?

5 The following statement by Pearsall of the Milwaukee facility of the Veterans Administration is to the point. I often wonder if veterans realize the magnificent insurance policy they hold with the government. An honorable discharge qualifies a veteran to go to a government hospital stay as long as necessary and if he passes on his funeral expenses burial etc. are all taken care of by Uncle Sam. If at the end of the hospital period he is unable to return home, he can go into domiciliary care. His transportation is paid both to and from the hospital and that of an attendant if necessary. While in the hospital he goes through one of the finest medical clinics in the country equipped with the latest modern equipment, and receives care from superior doctors nurses and other trained personnel. While there if necessary he is provided with good clothing cigarettes or smoking tobacco razor brush and comb tooth brush tooth paste shaving cream and soap and numerous other articles. He has a marvelous library at his disposal frequents entertainments of the highest order and all this without the worry of how the bill is to be settled. To me government hospital care is so superior that I would never consider entering even the most expensive hospital in the country. An insurance policy covering all the benefits given us by the government is not obtainable for any amount of money and if one were, doubtless few of us would be able to pay the premium of such a policy as it necessarily would have to cost very high. All veterans should think deeply of this advantage and feel grateful and thankful to our government for its thoughtfulness of us.—Pearsall, C. M. The Value of Benefits Enjoyed by Veterans. M. Bull. Vet. Admin. 13 372 (April) 1937.

6 The following is the ruling. The presumptive service connections have their origin in the amendment of August 9 1921 (42 Stat 147) which is an effort to bring within the law (War Risk Insurance Act) those veterans who were suffering with pulmonary tuberculosis and neuropsychiatric diseases who could not produce sufficient evidence to show direct service connection, provided that if they could show that they suffered from these diseases to an extent of 10 per cent disability within two years after separation from the service they should be considered to have acquired the disease in service. This presumption was later extended by the amendment of June 7, 1924 so that veterans with certain diseases (tuberculous and neuropsychiatric) which developed to a disability of 10 per cent degree or more prior to Jan 1 1925 are presumed to have incurred the disease in the military or naval service.—Federal Laws Relating to Veterans of Wars of the United States. Senate Document 131 Aug 2 1932.

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Various veterans' organizations (Disabled Veterans of the World War,⁸ American Legion, Veterans of Foreign Wars) and the Red Cross⁹ have welded the second link of this chain. The veterans' organizations solicit the membership of veterans of the World War and will assist all veterans in the preparation of their claims for compensation, representing them before rating boards. They must of necessity use every legal device at their command to obtain compensation for their clients, and they are constantly exerting every pressure direct and subtle to have compensation awarded, or increased, and at the very least not decreased. One method utilized in an effort to increase compensation is to attempt to have so-called non-service connected disabilities which are not compensable classified as being due to that portion of the disability that is rated as "service connected." For example, if a veteran who has been compensated for psychoneurosis acquires some other condition years later, say hyperthyroidism, an attempt might be made to rate the thyroid condition as due to the psychoneurosis, the compensation for "services connected" disability being increased accordingly. This is but an example, however, the direct and precipitate factors incident to diseases peculiar to veterans and the element of time existing between them would make interesting reading but we haven't the space for this diversion. The veterans' organizations have taken the apparent stand, indirectly it is true, that nothing is curable (i.e., that the amount of compensation should never be reduced). Whether or not they have transmitted this attitude to the rating boards (it must be stated that we had direct experience with the functioning of the Cincinnati rating board only) is not known, if not, it has been developed spontaneously there. The board is always willing to award or increase compensation, to decrease it, as a rule, is a very involved procedure.¹⁰ This influence is especially pernicious among individuals suffering from illnesses of a purposive nature, an improvement in their condition under these circumstances is out of the question.

8. Seemingly the only qualification one must have to gain admittance to this organization is a disability after having served in the forces during the World War. One of us attempting to determine what a veteran an imbecile did with his time and whether or not he was completely asocial was amused to hear him declare that he had many friends that the D A V were constantly writing to him asking why he didn't show up for their meetings.

9. That a national organization supported entirely by private subscription should be spending some of its funds and time attempting to obtain compensation for veterans seems rather peculiar at first sight. But it must be remembered that Congress has declared the responsibilities of the Red Cross to be the service man, the ex service man and the population in localities of disaster. Their point of view may be grasped when it is realized the Red Cross extends an interval type of relief to any veteran not entitled to relief from other agencies until some other more permanent arrangement can be secured for the veteran. The most permanent and possibly that most readily obtainable is compensation on the basis of some disability the Red Cross taking up the chore of proving it service connected which is the only type of disability compensable under the present laws [Disability allowance [as differentiated from disability compensation] provisions were enacted by the amendatory act of July 3 1930 [46 Stat 993]]. This measure constitutes a departure from the theory upon which the original World War veterans relief legislation was based in that it affords monetary benefits to veterans whose disabilities are not the result of service in the World War. This is as follows:

Any honorably discharged ex service man who entered the service prior to Nov 11 1918 and served ninety days or more during the World War and who is or may hereafter be suffering from a 25 per cent or more permanent disability as defined by the director (administration) not the result of his own wilful misconduct which was not acquired in the service during the World War or for which compensation is not payable shall be entitled to receive disability allowance of the following rates: 25 per cent disability \$12 per month 50 per cent disability \$18 per month 75 per cent disability \$24 per month total permanent disability \$40 per month.—Federal Laws Relating to Veterans of Wars of the United States Senate Document 131 Aug 2 1932.

10. The following note from the rating board (which consists of a physician an attorney and a lay individual) illustrates the point. To the neuropsychiatrist. The board notes that the examiner states that the disability psychoneurosis is temporary. The board wishes to know if a social service report was considered when making this statement. It shows more or less nervous trouble over several years time. Your opinion is desired before completing the rating.

Veterans' hospitals are scattered over the United States and all of these institutions have one or more neuropsychiatrists on their staffs. These physicians and hospitals are admittedly unequipped to care for the veteran with a neurotic disorder under the present state of affairs, for these individuals are discharged from these institutions after the diagnosis of psychoneurosis is made with the unfailing recommendation that treatment is not advised. This is a natural development under the handicap with which they work.

Despite the thoroughness with which the Veterans' Administration has gone about fostering neurotic disorders in their charges, one occasionally meets a veteran who has not become completely dominated by the situation and who desires help. He may be sent to a veterans' hospital¹¹ where he may receive bromides or phenobarbital, or he may visit the neuropsychiatrist at the regional offices as an outpatient and receive the same treatment. A veteran with psychoneurosis having myriad somatic complaints said that he had been ill since leaving the army (about eighteen years ago) and that he had been in numerous government hospitals and had had seventy x-rays, yet only once did a physician mention the possible mental origin of his difficulties. He was receiving \$100 monthly (for permanent and total,¹² "service-connected" disability) and that was all the Veterans' Administration had to offer him. This case is not at all unusual. A hernia may be repaired and syphilis cured, but the neuroses are only magnified under the present system and in fact are treated no better than they were a century ago.

THE MAZE OF GOVERNMENT EXAMINATIONS

It is interesting, albeit time consuming, to follow the ramifications of one of these individuals through the maze of government examinations (since treatment). This does not include the numerous examinations by private physicians for the purpose of furnishing affidavits. The following case is not at all unusual. The story begins at the Verdun front, where the veteran's left leg was damaged by a solid shell. Amputation was performed at the middle third of the left thigh Oct 11, 1918, at a French hospital. At the time of discharge, March 18, 1919, it was noted that an artificial limb had been fitted and that the patient was proficient in its use. He was receiving \$25 monthly compensation for the loss of the limb. On April 25, 1919, it was noted that he had been unable to use his left arm for a long period following blood transfusion after the amputation, fair warning of what was to follow. During the remainder of 1919 and 1920 he was periodically examined at a government hospital, especial attention being given to the stump and artificial leg. In December 1920 a reputable neurologist noted that the veteran was suffering from "mild psychasthenia." It was noted that he complained of insomnia, headaches, nervousness, inability to concentrate and a sensation resembling that of "insects crawling" over

11. These institutions usually refuse to admit veterans with psychoneurosis within a short time after their discharge from a hospital because they have received maximum benefit from hospitalization.

12. It might be well at this point to note that a patois (possibly better termed a lingo) has evolved in government service which is a model of prolixity and circumlocution although the users believe it definitive. Thus permanent and total disability rarely means what it says for one is often able to reach permanent and total disability yet remain able to carry on a productive and gainful occupation or be suffering from a reliable illness (e.g. psychoneurosis). For example a physician once drew maximum compensation for disability and at the same time practiced on a full time basis in a hospital. Some controversy ensued and the disability remuneration was discontinued as it was less than his salary. If however this individual relinquishes the practice of medicine he can receive immediate permanent and total disability benefits because of his illness.

his body. There then followed the examinations at regional offices and hospitals of the Veterans' Administration as shown in table 2.

At the time of the last examination the veteran was receiving disability compensation of \$125 a month. He was told that he was fit at one of the latter examinations and on that basis thought he might get insurance but was refused by one of the large life insurance companies. In passing it is noted that he is unable to name a single thing that he does to pass his time. It should not be difficult to visualize the confusion in

TABLE 2—Government Examinations of a "Neurotic" Veteran

Date	Diagnosis	Recommendation
12/14/20	Psychasthenia	Sedative physical therapy
3/12/21	Psychasthenia	
3/24/21	Psychasthenia	
5/14/21	Psychasthenia chronic articular rheumatism	
7/ 7/21	Psychasthenia	
10/24/21	Psychasthenia mild	Tonsil and adenoidectomy
12/ 9/21	Chronic articular rheumatism psychasthenia, chronic amygdalitis	
12/13/21	Psychasthenia	
3/ 4/22	Chronic articular rheumatism	
5/11/22	Psychasthenia amygdalitis	
10/13/22	Psychasthenia (improved)	A consultant recommended psychotherapy
11/ 6/22	Psychasthenia with depression	
12/11/22	Anxiety neurosis (I Q 86 at this hospital stay)	
1/ 2/23	Neuropsychiatric symptoms are markedly aggravated by army service	
1/22/23	Neurosis post traumatic hysteria	
6/29/23	Anxiety neurosis with depression and emotional instability	Maximum improvement from hospitalization not in need of outpatient or neuropsychiatric contact
7/ 2/23	Amputation left thigh healed	
7/24/23	A W O L	
11/12/23	Post traumatic neurosis with emotional instability and psychotic outbursts	
11/14/23	Chronic alcoholism	
1/ 4/24	to tachycardia	Examinations do not indicate any need for hospitalization
1/31/24	psychoneurosis anxiety neurosis	
2/28 to 3/24/24	Dementia praecox hebephrenic type acute gonorrheal urethritis	
9/15 to 9/23/24	Barbital addict A W O L	
1/10/25	Diagnosis undetermined	
1/12/25	No neuropsychiatric disability	
4/ 5/25	No neuropsychiatric disability	
4/25/26	No neuropsychiatric disability	
4/15/32	Traumatic constitution with psychoneurotic manifestations and episodes of psychotic behavior (attacks → hysteria)	
11/15/32	Same	
7/23/32	The foregoing plus mastoiditis	
9/27/32	to chronic bilateral amputation of left thigh otitis media chronic bilateral myopic astigmatism	
3/21/35	Traumatic constitution comparable to psychoneurosis neurasthenic type moderate rheumatism muscular and articular	
11/ 7 to 11/29/35	Psychoneurosis anxiety type moderate	
4/ 5/37	Psychoneurosis low average intelligence	

which such an individual finds himself, and we will pass over these details. Buffeted about, having his "reward for illness" periodically raised and lowered in amount for no apparent reason (actually on the basis of the diagnoses) and told nothing about the nature of his illness, he soon becomes a fairly useless individual as far as society is concerned.¹³ It should be repeated for emphasis that this is not an unusual record of a "neurotic" veteran.

13 The following letter is from an invalid psychoneurotic veteran who could probably be relieved in one's psychiatric practice yet is "permanently and totally disabled as far as the Veterans Bureau is concerned."
U S Veterans Bureau Dear Sir—In reply to your letter asking me to be sent to the Hospital I know my neural condition and I am sure the clinical examination would be more than I could stand. It is not that I don't wish to comply with your request but that I would feel safer at home. It may be some kind of phobia. I seldom get out of sight of my wife—she seems to be my perfect sedative.

The family life of veterans suffering from psychoneurosis was inquired into both from the veteran and from the wife who occasionally accompanied them. These veterans as a rule report their families well and happy, but their wives tell a different story. It is not unusual for the wife when queried in private to note that a child is "just like his father," with many of the same somatic complaints, fears, food fads and addiction to medicines, and express rather indirectly her own dissatisfaction. This seemed significant, although we have no statistical data on the subject. It would well form an excellent subject for investigation. It is a remarkable fact that the majority of these men assume the additional responsibility of a wife (repeated marriages seemed quite high in these veterans) and numerous children, despite the lack of energy and numerous complaints leading to invalidism or semi-invalidism. We hold no brief for the strict environmentalist, but children raised in the enervating atmosphere created by these individuals are certainly not bettered by it. Imitation of parents is a large and recognizable factor in the mental development of all of us. The onus for sponsoring a national neurosis therefore is not too large an indictment, when one considers what is taking place in our national life as a result of this unenlightened method of the treatment of a large group of the psychically ill.

RESPONSIBILITY FOR THE SITUATION

Is the Veterans' Administration, whose budget runs about one-half billion dollars yearly, solely responsible for this deplorable state of affairs? The hand of the bureaucrat is evident in no small measure.

What of the physician in the full term service of the government? A *laissez faire* attitude is easily developed in this atmosphere which is extremely enervating, as the work and even the complaints of clients become unusually routine. It would be our thought that this is possibly the case under any political system of organized medicine, where everything is done in a predetermined manner and according to rules that are along mathematical rather than medical lines, where everything is settled and down to percentage figures, and where initiative and originality are stifled because of the set precedent or stereotyped manner which determines the method of procedure. It might be well to survey the amount and quality of investigative work coming from the Veterans' Administration as a rough index of initiative under regimentation. Griffith, the medical director of the Veterans' Administration, in the preface to the medical bulletin issued quarterly by this organization, notes in speaking of the Veterans' Administration and its Bulletin, and the opportunities for research and study within the organization, "It is evident that the field for investigation is unlimited, and that the opportunity to make helpful application of the conclusions reached is unprecedented." If this is true and when it is realized that physicians in these posts have more leisure than their practicing or academic colleagues, it would seem that they should be as productive if not more productive than their unregimented practicing colleagues, other factors being equal.

Does the veteran himself carry any responsibility for the situation? He and his representatives know that it exists and could remedy the condition if they so desired. But the individual point of view is so short sighted that it fails to see that his birthright, which consists chiefly of good health, is being frittered away for a mess of pottage. Perhaps the majority are com-

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pletely uninterested, if so, their alleged representatives, their organizations, should interest themselves in the situation

A great deal of responsibility must be laid at the door of the practicing physician. It would amaze those who set too high a store on the ability and integrity of physicians as a whole to read some of the ridiculous statements which they give to their veteran patients or send to the Veterans' Bureau. A great many of the records of veterans contain statements from practicing physicians which are either falsifications or direct evidence of incompetence. Some practicing physicians, like our government, rate their patients' disability in exact percentage figures and more often than not find corroborating evidence (which does not exist) for claimed disabilities. This evidence cannot be waived as coming from "quacks"¹⁴ and "charlatans,"¹⁴ for although that would be the inference, the Veterans' Bureau does not accept medical, documentary evidence from other than licensed physicians.

PROCEDURE FOR THE FUTURE

What remedies are there to be offered to alleviate the present conditions or, to be a bit more practical, what should the procedure be when the situation again arises?

First, cases of psychoneurosis in veterans should be recognized early and treated properly. To assist the bureau in the determination of difficult cases, recognized specialists should be appointed to give an independent opinion on the complete evidence. This method is used by the English Ministry of Pensions¹⁵ and is in vogue at the Veterans' Facility at Hines, Ill., whence comes some of the more valuable medical opinion rendered in the Veterans' Administration. We do not mean by the term specialist some one who has assumed the title. Those who are diplomats of the American boards or on the faculties of medical schools would be desirable.

Since experience has proved that the Veterans' Administration is not capable of properly treating psychoneurotic veterans, some method for their early treatment should be devised. We would think that this treatment might be best carried on by psychiatric practitioners on a fee basis. This does not mean that these patients should be referred to any physician at a nominal fee, as is now occasionally done, but rather they should be sent to those trained in the handling of the psychoneuroses, and at reasonable fees to attract competent men. This would entail no more expense than the present method over a period of years.

The problem of disability compensation is indeed a knotty one. There is little argument against the fact that if veterans suffering from psychoneurosis were not compensated they would be better off socially, the community would be benefited and there is no doubt that they would then be amenable to psychotherapeutic measures. In the present state of affairs it probably would be best to admit no more men to the compensation rolls as psychoneurotic, and to fix some unvarying sum to be paid for life as just compensation to those already there. If the "disability compensation" were made permanent there would no longer be that insuperable barrier to rational treatment. Should the same situation arise in some future year, it would be well to limit disability compensation for psychoneurosis

to those shown to be disabled at the time of discharge from the service. Their number probably could be limited by competent entrance examination, but we would be the last to advocate that the soldier should be only the intellectually normal and mentally well integrated individual. We would lay the stress on the discharge examination, when the tension and rush are less and the opportunity to make a reasonable evaluation of the individual is in direct proportion to the examiner's ability. It would undoubtedly pay in the long run to have qualified opinion on the disabled individual and those claiming disability at that time. Belated applications for aid of course would be received under any system, but the aid given could be limited in all fairness to that noted in footnote 5. Surely this would constitute sufficient reward for doing one's duty.¹⁶

We would also recommend that veterans and especially the veterans' organizations be educated to the fact that the psychoneuroses are relievable and not "permanent and total" disabilities, as they seem to believe. It might also be well to invoke the fine and jail sentence for false statement against the physicians, veterans and their representatives who are deserving of them.

It appears that the tremendous financial outlay could be reduced and much suffering relieved by the use of reasonable methods. We have not gone into financial matters because of lack of space, but we recommend comparison of statistics from the British Ministry of Pensions and those of the United States Veterans' Administration. It will suffice for the medical reader to note that as Great Britain's expenditure for veterans steadily decreases, that of the United States rapidly increases. Lest the impression be derived that we are advocating a general reduction or discontinuance of disability compensation, let us settle this matter. We are of the opinion that those disabled in service cannot be compensated too much, regardless of the cause of the disability. We see no reason to cause directly or nurture disability by political methods after the cessation of service. Much of the medicine as practiced by the Veterans' Administration seems to us analogous to what may be expected under any regimented practice. Possibly we have here a "prevue" of state medicine, medicine as it is administered by politicians. It might be well for physicians to anticipate and originate any changes that are to be made in the future of the profession and thereby keep the administrative reins where they belong, in the hands of physicians instead of politicians. If the psychiatric service (this does not refer to custodial care) of the Veterans' Administration is any criterion, the former is to be preferred.

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¹⁶ See Foster Kennedy's letter to the New York Times in 1935. He has noted that in times of war it is the duty of the able-bodied men to defend their country. In times of war and peace it is the duty of able-bodied women to bear male children to defend the country. If one group is to receive special consideration monetary or otherwise for doing their duty the other should have it on the same basis. Dr. Kennedy's handling of the subject is most adept and we recommend its perusal.

The Galileo of Psychology—But, at present psychology is in the condition of physics before Galileo and the laws of motion, of chemistry before Lavoisier and the notion that mass is preserved in all reactions. The Galileo and the Lavoisier of psychology will be famous men indeed when they come, as come they one day surely will, or past successes are no index to the future. When they do come, however, the necessities of the case will make them "metaphysical"—Paget, Stephen *Confessio Medici*, New York, Macmillan Company, 1931.

¹⁴ We use these terms in the manner in which they are usually employed by organized medicine.

¹⁵ Eighteenth annual report of the minister of pensions from April 1, 1934 to March 31, 1935. London: His Majesty's Stationery Office, 1936.

EFFECT OF CERTAIN GYNCOLOGIC LESIONS ON THE UPPER URINARY TRACT

A PNEUMOGRAPHIC STUDY

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In several previous communications, one of us¹ in collaboration with Heaney and Ockulv studied by means of retrograde and intravenous pyelograms, the changes that occurred in the upper urinary tract during pregnancy and the puerperium. It was demonstrated in these studies that during pregnancy and the puerperium dilatation of the ureters and kidney pelves occurred in 100 per cent of our cases that there was a return to normal in 59.3 per cent after two weeks and in 34.3 per cent after six weeks and that the remaining 6.2 per cent were normal after twelve weeks. The striking fact about the dilatation of the ureter during pregnancy is that with rare exceptions it is above the brim of the pelvis. Another point emphasized by these studies was that lateral displacement when found early in pregnancy, tends to increase as the pregnancy advances. Many contributions have since verified these observations.

With these facts in mind, it occurred to us that it might be instructive and profitable to study a group of nonpregnant women who were suffering from various lesions of the gynecologic tract in order to obtain answers to the following questions:

1. Do changes in the upper urinary tract occur in association with lesions of the pelvic organs in women?
2. How frequently do they occur?
3. Is there any definite relation between the type of disorder in the pelvis and the lesions in the upper urinary tract?
4. In what way, if any, do the changes resemble changes found during pregnancy?
5. Do these changes completely disappear after the pelvic disorder has been corrected by the appropriate surgical measures?

SELECTION OF CASES

In the selection of cases for this study we used patients who had no urinary symptoms and who were normal on urinary examination so that we might demonstrate how frequently changes are found in this so-called silent or asymptomatic group. In cases in which there were urinary symptoms, attention is naturally directed toward the urinary tract hence changes, when present, are readily found. However, if a group of patients have no urinary symptoms changes in the upper urinary tract when present may be readily overlooked.

In view of the fact that we are also interested in trying to demonstrate whether changes in the kidneys and ureters disappear after appropriate gynecologic operation, a statement should be made that cases presenting carcinoma were not included for the following reasons: 1. It is well known that in cases of carcinoma

of the cervix, obstruction to the ureter occurs with great regularity. This has again been recently emphasized by Graves, Kickham and Nathanson³ who found obstruction in more than 70 per cent of their cases. 2. In view of the fact that the lesion in cases of carcinoma cannot be so completely removed as in other types of disease and hence changes in the upper urinary tract do not completely disappear as in cases in which the pathologic condition can be removed, we felt that cases of carcinoma were not desirable for the purposes of our study.

Isolated case reports of changes in the kidneys and ureters, associated with various lesions in the pelvic viscera have been reported but we have been unable to find papers in which large groups have been studied both before and after operation.

We carried out intravenous pyelography as a routine, using diodrast in 20 cc and 30 cc ampules.⁴ This was

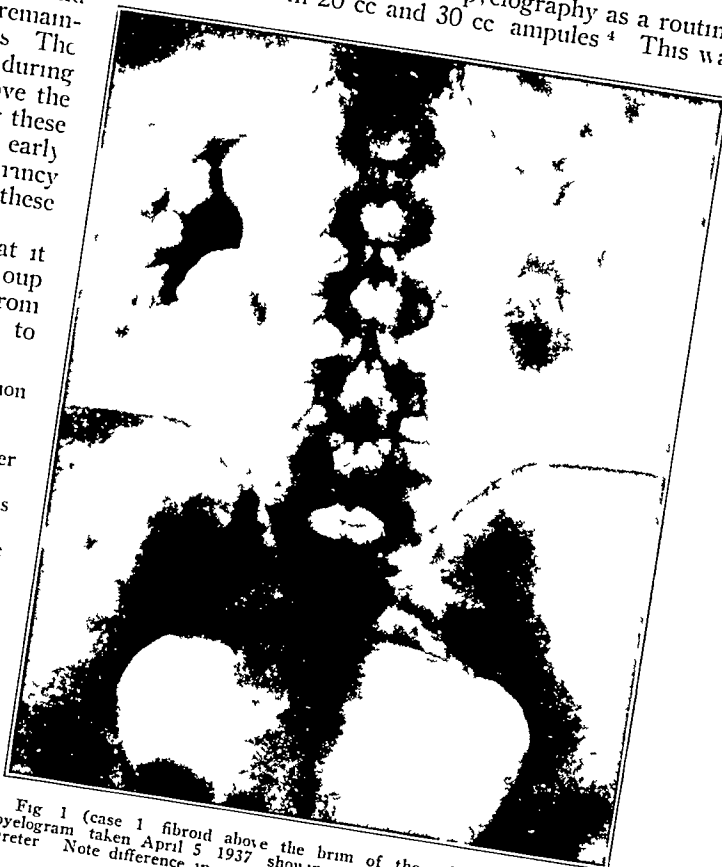


Fig 1 (case 1 fibroid above the brim of the pelvis)—Preoperative pyelogram taken April 5, 1937 showing marked dilatation of the lumbar ureter. Note difference in size between the right and the left pelvis.

supplemented by retrograde pyelograms in a few instances in which the intravenous method was not satisfactory or in which we wished to check the results of the intravenous pyelograms.

TYPES OF PELVIC DISORDER

In table 1 are presented the various types of gynecologic disorders that were found in this group of cases. *Fibroids Above the Brim of the Pelvis*—There were twenty-four cases of fibroids above the brim of the pelvis. Of these twenty-four cases, seventeen demonstrated a pathologic condition in the upper urinary tract whereas seven were completely normal. Six of these twenty-four cases showed unilateral right-sided dilata-

From the Thomson Urological Fund, Presbyterian Hospital and Rush Medical College and Cook County Hospital.
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5. Lee, H. P. and Meuser, W. F. The Effect of Pregnancy on the Urinary Tract. J. A. M. A. 102: 102 (Jan. 13) 1934.

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4. The diodrast was furnished for this purpose by the Winthrop Chemical Company.

tion, two unilateral dilatation with lateral displacement of both ureters, three bilateral dilatation, three bilateral dilatation with unilateral lateral displacement, and one bilateral dilatation and bilateral lateral displacement and in two there was displacement alone, unilateral in one, bilateral in the other, with no dilatation

Fibroids Below the Brim of the Pelvis—There were eleven cases of fibroids below the brim of the pelvis. In this group six presented pathologic changes in the pyelogram and five were normal. Three of these eleven cases showed unilateral dilatation, on the right side in two cases and on the left in the third, one unilateral dilatation with unilateral lateral displacement, one bilateral dilatation, and one bilateral dilatation with bilateral lateral displacement.



Fig. 2 (case 1)—Postoperative pyelogram taken April 24 showing normal condition.

Ovarian Cysts—In this series there were eleven cases. Nine showed changes in the upper urinary tract and only two appeared normal. In four cases there was unilateral dilatation (three on the right and one on

TABLE 1—Types of Gynecologic Disorders

Condition	Cases
Fibroids above the brim of the pelvis	24
Fibroids below the brim of the pelvis	11
Ovarian cysts	11
Prolapse	4
Tubo-ovarian abscess	1

the left side). In one case there was unilateral dilatation with unilateral lateral displacement, in three cases bilateral dilatation, and in one bilateral dilatation with unilateral lateral displacement.

Prolapse—Of the four cases of prolapse, three appeared normal and only one showed bilateral dilatation.

Tubo-Ovarian Abscess—In the one case of tubo-ovarian abscess the pyelograms were negative (table 2).

CHANGES IN THE PYELO-URETEROGRAM

Pyelogram—The changes varied in degree from unilateral dilatation of the pelvis alone or dilatation of the pelvis and calices to very extensive dilatation and clubbing of the calices.

Ureterogram—The changes in the ureters consisted of unilateral or bilateral dilatation and unilateral or bilateral displacement of the ureters or a combination of the two.

It was interesting to note that, irrespective of the type of gynecologic lesion present, the dilatation when found, was above the brim of the pelvis, with the exception of the one case in which the pelvic ureter was dilated down to the vesical end (case 2, figs 1 and 2). In this case a diagnosis of true stricture of the ureter

TABLE 2—Observations on Piecemeal Pyelo-Ureterograms

	Fibroids Above Brim of Pelvis	Fibroids Below Brim of Pelvis	Ovarian Cysts	Prolapses	Tubo-Ovarian Abscess	Total
Normal	7	5	2	3	1	18
Unilateral dilatation	6	3	4	0	0	13
Unilateral dilatation and unilateral displacement	0	1	0	0	0	1
Unilateral dilatation and bilateral displacement	2	0	1	0	0	3
Bilateral dilatation	1	1	1	0	0	3
Bilateral dilatation and unilateral displacement	0	1	0	0	0	1
Bilateral dilatation and bilateral displacement	1	1	0	0	0	2
Unilateral displacement	1	0	0	0	0	1
Bilateral displacement	1	0	0	0	0	1
Total	24	11	11	4	1	51
Normal	7	5	2	3	1	18
Pathologic	17	6	9	1	0	33

at the vesical end was made, and so it undoubtedly does not belong in this category of cases and will be discussed further along in the paper.

THE RESULTS

The largest percentage of changes in the upper urinary tract was found in the cases of ovarian cyst, out of a total number of eleven cases, changes in the pyelo-ureterograms were noted in nine cases, or 81.8 per cent. It would appear reasonable to assume that the high incidence of changes in the upper urinary tract in ovarian cysts is probably due to the fact that the cysts, being of soft consistency, readily mold themselves into the pelvis, which results in pressure on the ureters, as seems to be the case in pregnancy. If the two very high-lying intra-abdominal ovarian cysts are excluded which because of their position, could not possibly have compressed the ureter, it is found that the ovarian cysts produce changes in the upper urinary tract in 100 per cent of the cases. Therefore it would be reasonable to assume that the consistency of the tumor and its ability to mold or compress has something to do with the high incidence of the changes in the upper urinary tract.

In the large fibroids above the brim of the pelvis 70.9 per cent showed changes in the ureteropyelograms. When the lateral displacement of the ureter was bilateral the uterine enlargement was mainly in the midline (case 3, fig. 3). In the case in which there was unilateral displacement, the growth of the tumor corresponded to the side of the displacement.

Of the large fibroids above the brim of the pelvis in which there was no dilatation of the upper urinary tract, it was found at operation that the fibroid growing out of the pelvis left a free interval between the tumor and the brim of the pelvis, so that there was no pressure on the brim of the pelvis. In the cases in

case it was impossible to get the patient back to the hospital for a check-up. It is interesting to note at this point that in the one instance in which the marked lateral displacement did not return to normal it is possible that the interval between the operation and the intravenous pyelographic study was too short to obtain a complete return to normal. In this connection we wish to state that, in some of the cases that showed the presence of slight changes two weeks after the operation, subsequent study two or three months later showed

TABLE 3—Observations on Postoperative Pyelo-Ureterograms

	Fibroids Above Brim of Pelvis	Fibroids Below Brim of Pelvis	Ovarian Cysts	Prolapses	Tubo Ovarian Abscess	Total
Complete return to normal	1		7	1		24
Partial return to normal	2	1	1			4
Marked improvement			1			1
No change	1	1				2
Not in for check up	1	1				2

a complete return to normal. In the few instances in which there was no return to normal, it is possible that inherent ureteral pathologic changes were present, although no symptoms and no changes in the urine were evident.



Fig. 3 (case 3 large fibroid above the brim of the pelvis)—Preoperative pyelogram taken April 13, 1937 showing marked lateral displacement of the left ureter and displacement and angulation of the right ureter. The right pelvis shows slight dilatation.

which there was dilatation, it was found at operation that the fibroid so molded the pelvis that it probably compressed the ureter with resulting dilatation. In one case the dilatation was limited to some of the calices and rapidly disappeared after operation. Therefore it is reasonable to assume that pressure seemed to play a role in dilatation because the dilatation disappeared after the fibroid was removed.

In a review of fibroids below the brim of the pelvis, in table 2, changes in the upper urinary tract were produced in six out of eleven cases. Since, in the cases selected, the fibroids were in no instance smaller than a three months pregnancy, the same role in the production is possible.

STUDY OF THE POSTOPERATIVE URETEROPYELOGRAMS

In table 3 are presented the results of the study of the pyelograms made after surgical operation to determine whether the changes shown preoperatively are permanent or whether they disappear after the pathologic condition is corrected. Postoperative pyelograms were made with the results shown.

Of the patients with fibroids above the brim of the pelvis showing changes in the ureteropyelograms thirteen showed a complete return to normal. Of the four instances in which there was no return to normal, slight dilatation persisted in two, a certain amount of lateral displacement persisted in one and in the fourth



Fig. 4 (case 4 right ovarian cyst)—Preoperative film taken Nov. 12, 1935 showing double kidney and double ureter on the right with marked dilatation. Note extreme dilatation of the right lumbar ureter.

Of the six cases showing pathologic changes below the brim of the pelvis and changes in the ureteropyelograms, in three there was an immediate return to normal after operation. One case showed no improvement—a true bona fide stricture of the ureter—and in one case there was marked looping of the ureter,

in the third it was impossible to obtain a postoperative pyelogram. In one instance preoperative pyelograms were normal, postoperative pyelograms showed dilatation and subsequent pyelograms showed a return to normal.

In the group of ovarian cysts, of the nine cases that showed changes in the ureteropyelograms before operation there was a complete return to normal in seven within twelve days after operation. Of the two patients who did not completely recover, one showed marked improvement, and we believe that with a further passing of time recovery will be complete. In the second case there was marked postoperative improvement but no complete return to normal. In this instance a congenital anomaly was present, namely, a double kidney.



Fig. 5 (case 4)—Postoperative pyelogram taken November 23 showing marked improvement but not complete return to normal.

with a double pelvis, and it is possible that the presence of the congenital anomaly accounts for failure to return to complete recovery.

SUMMARY AND CONCLUSIONS

1 It would appear that the incidence of secondary changes in the upper urinary tract in association with various types of gynecologic disorders is high. In this series of fifty-one cases, evidence of changes in the upper urinary tract was found in 64.7 per cent. In the group of fibroids, changes were found in 65.7 per cent, in ovarian cysts, 81.9 per cent, in prolapses 25 per cent, in the one case of tubo-ovarian abscess there was no change in the upper urinary tract.

2 Failure to appreciate the frequency with which these lesions occur is due to the fact that there has been no routine preoperative study in the group of cases that do not present urinary symptoms and urinary signs.

3 Following appropriate surgical procedure a return to normal takes place in 72.5 per cent.

4 Subsequent pyelograms should be carried out in all cases in which recovery has not occurred at the time the patient is discharged from the hospital.

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ABSTRACT OF DISCUSSION

DR ROSEMARY SHOEMAKER, Rochester, Minn. This paper has presented a group of cases which are too often overlooked because of lack of symptoms. In considering the mechanism of dilatation of the ureter in these cases I would mention three etiologic factors: atony, mechanical obstruction, or obstruction resulting from intrinsic inflammatory changes in the ureteral coats or extrinsic inflammatory changes surrounding the ureter. In cases of extrinsic inflammatory change there may even be an easy plane of cleavage between the ureter and the lesion in the pelvis. Atonic dilatation is the mechanism by which the normal physiologic dilatation so frequently seen in pregnancy is produced. Recent experimental work by Traut, McLane and Kuder has shown that dilatation begins about the third month of pregnancy and continues to the seventh month, from then on it begins to recede and peristalsis gradually returns. I might also mention that this atonic dilatation is found in four-footed animals, namely, in mice and rats in which case the posture of the animal obviates the question of mechanical pressure. Obstruction by mechanical pressure may be produced by fibromyomas and ovarian cysts, although in the experience of Dr Cabot with whom I discussed this subject, it is not of so frequent occurrence as Drs Kretschmer and Kanter have pointed out. The most fixed point in the course of the ureter is at the crossing of the uterine artery. Fibromyomas arising in the lower third of the uterus and extending laterally generally pass either in front of or behind this point. If they pass behind this point the ureter may be dilated because of stretching over the tumor. Dilatation from inflammatory changes in the pelvis externally but intimately surrounding the ureter occurs as a result of interference with normal ureteral peristalsis. Surgical removal of such lesions in the pelvis as tubo-ovarian abscesses, inflammatory adhesions or fibromyomas allows the ureter to resume its normal peristalsis. Postoperative studies will show a return to a normal urinary tract in a high percentage of cases (about 95). All these patients should be investigated urologically in spite of or I might say because of their lack of symptoms so that urinary conditions which may influence the postoperative recovery may be discovered and taken into account in the care of the patient.

DR WILLIAM E. STEVENS, San Francisco. I found that about 824, or 9.9 per cent of the previous 8302 patients admitted to the women's clinic in the department of obstetrics and gynecology at Stanford University School of Medicine were referred to the female urology division because of urinary symptoms. These did not include patients with acute gonorrhea. Pathologic and physiologic changes in the generative organs, although present in a larger proportion were possible or probable etiologic factors in about 27 per cent of the 824 cases. The lesions of the genital organs which were most often responsible for associated urinary tract disorder were cervicitis, displacement of the uterus, tumors of the uterus, ovaries and broad ligament salpingitis and parametritis. The bladder and ureters are more frequently injured during gynecologic operations than the literature would indicate. One of San Francisco's best known gynecologists has recently been compelled to undergo a malpractice suit because of an alleged ureteral injury during a hysterectomy. The patient's urine was sterile. An abdominal tumor appeared on the sixteenth day. Examination by a competent urologist failed to disclose an injured ureter. More or less retention of urine usually follows major gynecologic surgery and residual urine may persist indefinitely. Pyelo-nephritis is a very common sequela. I do not believe that infection of the cervix is as frequently responsible for direct ascending lymphatic infection of the kidney as stated by several prominent observers. This may sound like heresy. Cervicitis ranked first among the lesions of the genital organs in our

cases but urethritis, trigonitis and cystitis were the most common urinary tract conditions with which it was associated. Displacement of the urethra is not infrequently associated with marked prolapse of the uterus and cystocele. Drs. Kretschmer and Kanter suggest the advisability of examination of the urinary tract in the presence of most genital lesions, although objective and subjective symptoms of pathologic conditions in the former organs may be absent. Conversely, examination of the genital tract in the presence of lesions of the urinary organs is often of great importance.

Dr. HERMAN L. KRITSCHMER, Chicago. There were two points that we tried to emphasize, one of them was the fact that the changes found in this group of cases occurred much more frequently than is generally supposed, especially in the group of patients who have no urinary symptoms and in whom the urine analysis is normal. The second point was that with the correction of the pelvic disorder, there was a rapid return to normal in a majority of cases at the time the patient left the hospital. In the small group of patients who still showed changes at the time of discharge from the hospital, subsequent check-up pyelograms showed a return to normal. The changes found in this group of cases are particularly identified with the changes found in the upper urinary tract in pregnancy. The patients who have urinary symptoms at the time they present themselves for gynecologic examination usually receive the benefit of a complete urologic study, so that when changes are present in the upper part of the urinary tract they are found. On the other hand the group of patients who do not have urinary symptoms receive no urologic study and hence lesions when present are naturally overlooked.

ROENTGEN DIAGNOSIS OF CONTUSIONS OF THE KIDNEY

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Injuries to the kidney have shown a great increase in frequency during recent years and are now of relatively common occurrence. Severe injuries are of the utmost importance because they constitute a serious menace to life itself, and these traumas have consequently received the consideration due them. Mild injuries to the kidney are more important to the practitioner in view of their greater frequency—traumas which may not at the time appear as significant but which may lead to the invalidism of chronic or recurrent infection and in some instances to subsequent formation of stone.

The diagnosis in severe cases is not difficult, the syndrome of pain, hematuria and prostration after a blow to the loin giving a characteristic clinical picture. With mild traumas, however, it has been impossible to determine with certainty whether or not damage to the kidney has actually taken place. Many injuries diagnosed in the past as contusions of the back muscles and lower ribs undoubtedly involved the kidney, the symptoms not having been of sufficient severity to point at the onset to renal damage. This type of trauma, with only moderate injury to the kidney, doubtless accounts for pain and lameness of the back which incapacitate the patient for an inordinate length of time. Indeed, signs and symptoms in cases of mild renal injuries are often so scanty that the diagnosis may be mentioned only as a possibility and cannot be made definitely by diagnostic methods previously available. The presence of blood in the urine has been considered the most

important sign of renal injury. Massive hematuria and prostration are absent in many instances, even microscopic evidence of bleeding may not be present with extra-renal oozing and edema. Also, many other causes of hematuria must be considered before one arrives at a definite diagnosis.

It has heretofore been generally recognized that the clinical manifestations of mild renal trauma are meager, variable and not definitely diagnostic. There may occur only transitory symptoms of variable duration, during which the patient complains of urgency and frequency, or, in some instances, there may be no urinary symptoms at the outset, with a deep-seated renal infection evidencing itself after the lapse of a few weeks. Roentgenologically, also, renal trauma has not been definitely demonstrable unless ruptures or tears of considerable degree existed, and then only if the damage communicated with the renal pelvis or calices. The



Fig. 1 (case 1)—Contusion of the right kidney. The left side is normal. On the right side the renal pelvis is flattened along its inferior surface and narrowed. The calices are compressed and elongated. The inferior calices are partially and the middle calyx is completely obliterated. The ureteropelvic junction is displaced upward. The right ureter is pushed medially in its upper and midportions.

present communication is concerned with a roentgenographic method of diagnosis in cases of mild or moderate injuries to the kidney and is applicable particularly to the type of cases which previously offered the greatest diagnostic difficulty, i.e., contusions of the kidney without severe tears or ruptures of the renal tissues. The observations on which this diagnosis rests were first made by one of us (D. B. S.) about one year ago. Since then we have observed a series of cases which form the basis of this report. This is the first note in the literature utilizing these signs in the diagnosis of renal contusions.

ETIOLOGY

Injuries to the kidney may result from a blow to the back, loin or abdomen and from indirect trauma such as a severe strain, a sudden bending of the body or a fall from a height in which one lands on the feet or the

buttocks. With the wider use of automobiles and the greater number of industrial accidents there will continue to be an increasing number of renal injuries. Some of the common causes of direct trauma may be enumerated as follows: falls from a tree porch or other point of elevation, football, basketball, hockey and other games entailing hard bodily contact, penetrating wounds due to sharp tools or knives and falls onto a picket fence, automobile accidents, industrial traumas, kicks from animals. The injuries are more common in men, owing to their greater exposure to these hazards.

PATHOLOGY

Injuries of the kidney vary from slight traumas to very severe rupturing or tearing wounds and may be classified according to the extent and location of the pathologic changes as follows: (1) edema of the renal or perirenal tissues, (2) extracapsular hemorrhage involving the perirenal fat and fascia, (3) tears of the capsule and perirenal tissues, (4) subcapsular tears



Fig. 2 (case 1)—Three weeks after figure 1. The changes on the right side are similar but distinctly less marked than previously, indicating improvement. The pelvis and calices remain distorted; the upper part of the ureter is displaced medially and its normal curves are still absent.

varying from single fissures to marked fragmentation (5) laceration of the parenchyma, capsule and perirenal tissues and (6) injuries to the pedicle, with rupture of the blood vessels or ureter or both.

The bleeding which results may consist of hematuria or intrarenal, perirenal or intraperitoneal hemorrhage. Edema occurs simultaneously in and about the kidney. Owing to the edema and the accumulation of oozing blood the calices and renal pelvis are compressed and the upper portion of the ureter is displaced medially and sometimes upward. These variations in the kidney pelvis, calices and ureter give the roentgen appearances characteristic of contusion of the kidney which are to be described in detail hereafter. As the fluid is absorbed, the changes gradually diminish and unless organization occurs within the perirenal tissues or kidney, the ureter and pelvis return to their normal position and contour after a few weeks. If fibrosis in the renal parenchyma takes place permanent alterations in the contour of the calices result.

ROENTGEN APPEARANCES

The roentgen examination is of the utmost importance in establishing the diagnosis of renal injuries and should be carried out in all cases unless contraindicated by the severity of the injury, in which instance it should be done as soon as possible. The first x-ray film may give helpful information occasionally and can often be made when the severity of the injury precludes more detailed studies. Some or all of the following signs may be demonstrable and assist the physician in arriving at a diagnosis: (1) haziness, or apparent enlargement of the renal shadow, (2) absence or blurring of the outline of the psoas muscle, (3) fixation or limitation of mobility of the kidney, (4) fracture of the lower ribs or transverse processes of the lumbar vertebrae and (5) scoliosis. It must be borne in mind that these signs may be associated with other conditions and are not pathognomonic of renal trauma.

Pyelographic studies are carried out by the retrograde or intravenous route depending on the condition of the patient. The retrograde method is usually the more satisfactory. Repeated examinations may be necessary and should be done as the patient's condition permits. With severe shock and hemorrhage, roentgen studies are contraindicated and should not be allowed to delay the prompt institution of proper remedial measures. A badly injured kidney may show very faint or no visualization on intravenous urography, the output on the unaffected side being normal. Extensive ruptures which communicate with the pelvis and calices are shown by extravasation of the opaque medium into the kidney parenchyma or subcapsular tissues.

In the past, the foregoing were the only recognized roentgen signs of renal trauma and required severe damage. However, we have observed definite x-ray appearances after mild or moderate injuries on the basis of which a diagnosis may be made. As has been mentioned a renal injury may result in edema and hemorrhage about the kidney, and in these cases we have observed characteristic changes in the ureter, renal pelvis and calices which are demonstrable on the pyelogram. The ureter normally courses downward along the margin of the lower pole of the kidney, then curves laterally for a short distance and in its middle third swings medially again, in cases of contusions of the kidney it is pushed toward the vertebral column forming an arc, and in some instances may even overlie the bodies of the vertebrae. The normal narrowings, dilatations and curves of the upper part of the ureter are obliterated, and this portion of the ureter becomes definitely pathologic in appearance. The ureteropelvic junction may be displaced upward. The kidney pelvis is narrowed and flattened along its inferior border, particularly if it is of the extrarenal type. The calices and infundibula become compressed and distorted, in some instances seeming almost spider-like. The ureter usually returns to its normal position in the lower lumbar or upper sacral region. Extravasation of the opaque medium into the kidney parenchyma or perirenal tissues may also be present if severe injury to the kidney has taken place, giving further indication of the extent of the trauma. Periodic re-examinations at intervals after the injury show the gradual return of the pelvis and ureter to normal position and contour, affording valuable information as to the absorption of the blood and edema and the healing of the renal injury. Therefore, the roentgen studies may have prognostic as well as diagnostic significance.

The demonstration of these changes in the renal pelvis, calices and ureter in conjunction with a history of trauma is positive evidence of contusion of the kidney. The absence of these appearances urographically however, does not exclude renal injury, as hemorrhage and edema may be so situated as not to produce them. As heretofore stated, no description of these roentgen appearances is reported in the literature, however on reviewing the prints of the roentgenograms published by various authors in discussions of renal injuries, we have found instances showing the changes described by us.

DIFFERENTIAL DIAGNOSIS

The following more important conditions must be considered in a differential diagnosis (1) renal neoplasm, (2) tuberculosis of the kidney (3) infections of the kidney and ureter and (4) perinephric abscess.

In cases of renal neoplasm, narrowing and irregularity of the renal pelvis and calices may occur and also varying degrees of distortion of the ureter. However, there is usually a history of loss of weight and strength with a mass in the kidney region, and reexaminations at intervals show progressive, destructive changes in the kidney. In cases of neoplasm, the hematuria continues to increase, while in cases of renal contusions the blood is usually small in amount and decreases with the passage of time.

Tuberculosis of the kidney may produce changes in the calices similar to those described by us, but the absence of flattening of the pelvis and displacement of the ureter together with the laboratory observations characteristic of tuberculosis exclude the possibility of contusion.

Infections of the kidney and ureter may cause blunting of the calices but do not present the changes in the renal pelvis and ureter which are seen after trauma.

In cases of perinephric abscess, arching of the ureter and flattening of the renal pelvis may occur, as with contusion of the kidney. However, there is an associated picture of sepsis which is absent in cases of renal contusion. The differential diagnosis may be difficult however, without a history.

REPORT OF CASES

CASE 1—J J W, a man, aged 26 was thrown from a horse and the horse fell on him bruising his right hip and loin. When brought to the hospital, he complained of pain in the right side, anorexia and weakness. Examination of the urine on admission showed albumin, rare red blood cells and a small amount of pus. Physical examination showed tenderness in the right lower quadrant and costovertebral angle.

Three weeks later he returned with nocturia, chills, malaise and continuous pain in the right loin. The temperature was 101 F and the pulse rate 120. Intravenous urography showed almost complete obliteration of the inferior calix on the right with medial displacement of the upper portion of the right ureter, consistent with edema and intracapsular and extracapsular hemorrhage.

Two days later the urine showed a specific gravity from 1.006 to 1.020, a slight possible trace of albumin, a few pus cells and in one specimen hyaline casts and red cells. The uric acid was 5 mg and the nonprotein nitrogen 48 mg per hundred cubic centimeters at that time, in the succeeding weeks the nonprotein nitrogen gradually dropped to 34 mg.

This patient presented definite evidence of edema and perirenal hemorrhage and had a typical case of contusion of the kidney.

CASE 2—W G F, a man aged 62 was injured in an automobile accident, being struck on the left side. Because of pain he was strapped, but without relief. He had urgency, urination every hour and nocturia (with urination three or

four times). The urine was darker than usual. There was no previous history of similar complaints. The urine showed a few white cells and otherwise nothing unusual. There was tenderness over the entire left part of the back and the left side, with a feeling of resistance in these regions. No mass was felt.

Ten days after the injury, pyelography was done. The catheter (no 5) met with obstruction at 8 cm. The middle and lower calices were narrowed; the upper ureter was displaced medially.

The diagnosis was contusion of the left kidney with renal and perirenal edema.

CASE 3—J F, a man aged 48 was tossed about severely in an automobile accident, landing on the back. Two days later he noted dysuria, urination every fifteen minutes and nocturia (with urination eight or ten times). There was no history of previous genito-urinary disturbance.

Eight days later there was tenderness over the left costovertebral angle, no masses were felt. The urine was clear, the specific gravity 1.010 and the reaction acid and there were rare pus and red cells.



Fig. 3 (case 2)—Contusion of the left kidney. The pelvis of the left kidney is small and flattened on its inferior surface; the calices are compressed and faintly visualized. The left ureter is pushed toward the midline in its upper and midportions.

Pyelo-ureterograms showed the right kidney normal. On the left the calices and pelvis were narrowed; the ureter showed displacement medially in its upper portion.

The diagnosis was contusion of the left kidney with renal and perirenal edema.

CASE 4—R B, a woman aged 34, was struck by an automobile suffering injuries to the back, abdomen, extremities and face. Twenty-four hours later she noticed frequency, urgency and nocturia (with urination about ten times) with pain in the left side. Two days later examination of the urine showed many white cells, a few red cells, no casts and a trace of albumin. The temperature was 99.4 F and the pulse rate 100. The patient remained in bed for several days and during that period continued to have urination every fifteen minutes, nocturia, dysuria, chills and pain in the back. There was also gross hematuria.

Two weeks after the trauma pyelography showed flattening and narrowing of the left renal pelvis with medial and upward displacement of the superior third of the ureter.

The diagnosis was contusion of the left kidney, perirenal edema on the left.

CASE 5—H A, a man aged 24 was struck by a truck, suffering multiple injuries, and was brought to the hospital unconscious. During his stay of eleven days in the hospital he had urgency, frequency and nocturia.

Two weeks later these complaints were still present. There was tenderness in the left side of the back and in the left flank and groin. The urine showed a trace of albumin, no casts and a few red and white cells. Pielography revealed compression of the left pelvis and calices with mesial and upward displacement of the proximal portion of the left ureter.

The diagnosis was contusion of the left kidney.

CASE 6—J M, a man aged 25, was struck while at work by an automobile and thrown to the ground being rendered unconscious. On admission to the hospital he complained of severe pain in the right upper quadrant and the right part of the back. There was no vomiting or hemoptysis. On examination there was tenderness in the right upper quadrant and over the right costovertebral angle. Spasticity and rebound tenderness were also present in the right upper quadrant.

Blood was oozing from the urethra, and the urine contained gross blood. The patient continued to pass bloody urine for several days. About one week after admission there was microscopic blood on urinalysis and this persisted for about eight days.

X-ray examination revealed a small narrowed renal pelvis with distortion of the calices on the right side, the upper and midportions of the right ureter were displaced slightly toward the midline.

CASE 7—W T, a man aged 41 fell a distance of several feet striking on his back. He complained of severe pain over the lower part of the abdomen and the back, especially in the region of the right kidney.

On examination there were tenderness and pain in the right lower quadrant and costovertebral angle, with moderate spasm. There were contusions and abrasions over the posterior aspect of the right side of the chest and midback.



Fig. 4 (case 4)—Contusion of the left kidney. There is fuzziness of the left inferior calices. The left renal pelvis is flattened and the ureter is displaced medially in its upper portion.

About six hours after the injury he passed bloody urine. The hematuria continued for four days. On the sixth day there were about twenty red blood cells per high power field, three days later microscopic examination revealed only a rare red corpuscle and a few white blood cells in the urine.

Pyelographic studies showed poor visualization of the calices on the right side, the renal pelvis was flattened, the upper part of the ureter was displaced medially and showed absence of its normal curves.

The diagnosis was contusion of the right kidney.

SUMMARY AND CONCLUSIONS

Injuries to the kidney have shown a great increase in frequency during recent years. The mild injuries have not in the past received the attention they merit.

In cases of severe trauma the clinical manifestations are characteristic, and diagnosis is usually not difficult. With mild or moderate injury, however, there has formerly been no satisfactory method of demonstrating whether or not actual damage to the kidney itself has taken place.



Fig. 5 (case 6)—Contusion of the right kidney. The right ureter curves medially and is displaced toward the midline. The right renal pelvis is compressed and the calices are distorted, particularly the inferior calices.

There is a roentgen method of diagnosis in cases of mild renal injuries, the type of case which previously offered diagnostic difficulty. Trauma to the kidney may cause edema and hemorrhage into and about the kidney. The extravasated fluid displaces the upper part of the ureter medially, narrows the calices and causes flattening of the inferior surface of the renal pelvis. These changes are demonstrable by pyelographic examination and give a graphic method of diagnosis in cases of contusion of the kidney.

485 Commonwealth Avenue—416 Marlboro Street

ABSTRACT OF DISCUSSION

DR. EDWARD L. JENKINSON, Chicago: This paper offers a rather fertile field for further investigation. I should like to ask whether all the patients had blood in the urine and in the cases that did not show blood, whether they were of any consequence and whether or not further investigation is necessary. I should also like to ask how many of these cases show areas of calcification in the hemorrhages after this so-called rupture or injury to the kidney. Many of these observations are undoubtedly important but I wonder, in the absence of a history of injury, whether or not one could take one of these cases and from the displacement of the ureter or rather, the redundant ureter state definitely that the lesion was due to an injury. I believe there are a number of other conditions which undoubtedly would simulate a good many of these conditions.

DR. DAVID B. STEARNS, Boston: The authors have pointed out in detail the x-ray observations in contusion of the kidney. I wish to add a few words about the clinical picture about which

little is said in textbooks and the literature. In the cases I have had, the urinary symptoms have first been unnoticed by the physicians. Most cases of contusion of the kidney are regarded originally as simple back injuries. If the patient noticed frequency or urgency, he thought it might be due to nervousness. When this persisted, he decided that it might be of some importance and so brought it to the attention of his physician. Most patients have had pain in the loin. Frequency, urgency, nocturia and dysuria have been present in every case and started anywhere from six hours to forty-eight hours after the injury. In one fifth of the cases these symptoms were present for but three or four days. In the remainder they lasted from three to seven weeks. In 50 per cent a low grade fever was present beginning soon after the urinary symptoms began and in these cases the urinary symptoms seemed to last longer than in those cases in which there was no fever. Hematuria in various degrees was shown in almost every case. Two showed massive hematuria, so that the patient noticed a red or brown urine. Nearly all of them showed a number of pus cells in varying degrees when pus cells were present in large numbers, fever was usually also present and when there was fever and a larger number of pus cells the condition lasted longer. To rule out the possibility of urogenital infection in the older men a prostatic examination was made. In one case it was the finding of fever that turned the physician's attention from the simple contusion of the back to the possibility of renal injury. In two thirds of the cases in which the symptoms lasted for more than three weeks other laboratory examinations were instituted after examination to show the possibility of infection tumors or other conditions. Finally in one third of the cases urinary symptoms recurred showing evidence of lowered renal resistance one which occurred in five months and in another case twice during the following four years, which was the case of the first roentgenogram that was shown. Another point is the medicolegal aspect of this condition. The prognosis in contusion of the back muscles is quite different from that of the diagnosis of proved renal contusion in which there is a possibility of long standing renal infection and the possibility of precipitation of calculi may be present. In this series of cases, no calculus has as yet developed. Dr Squires in a recent paper reported a case of a motorcycle policeman who had fallen on his back but did not rupture the kidney. Bilateral calculi had been formed in his kidneys about three months after the injury. Calculus formation following kidney contusions therefore seems possible.

DR ROSS GOLDEN, New York. I should like to ask whether there is any contraindication to retrograde pyelography in these cases also what is the relative value of retrograde and intravenous methods of pyelography?

DR W. T. CLARK, Janesville, Wis. I should like to know how early the procedure was done in these cases. A few years ago I saw several ruptured kidneys which in the first day or two, showed a little blood in the urine. Two of those which came to autopsy were badly ruptured kidneys. The patients died quickly. To be of any particular use to those patients with regard to roentgen diagnosis, one must make that diagnosis relatively early.

DR MAX RITVO, Boston. With reference to the subsequent development of calcification this has not occurred in any of our cases. However it is a possibility, as we are familiar with post-traumatic calcification in hematomas and about the knee in Pellegrini's disease. Dr Ross Golden informs me that he has observed it in one case. Dr Jenkinson inquires whether the condition may be diagnosed without a previous history of injury. The x-ray appearances are diagnostic, although there are other conditions which may produce a somewhat similar picture. The situation is analogous to that in the diagnosis of silicosis. However, the roentgenologist is a medical consultant and should in every instance have a full knowledge of all the clinical facts that may assist him in arriving at a diagnosis. Although it is frequently possible to make a correct interpretation from the films alone, this is not desirable in order to perform his true function as a consultant, the roentgenologist should always know the history the results of the physical examination and other pertinent data. Dr Golden has asked whether there are any contraindications to retrograde

pyelography and the relative value of intravenous and retrograde studies. With reference to the first portion of the question the clinical aspects of the case are the deciding factors. If the injury was severe, as evidenced by shock and hemorrhage, retrograde studies are contraindicated with mild or moderate injuries, they may be carried out with safety. The intravenous route usually gives satisfactory results however we feel that retrograde studies are the method of choice in most instances. Dr Clark asks whether the examination may be carried out soon after the injury particularly in the case of a ruptured kidney. The present discussion has been limited to the milder kidney injuries. We do not advise the early use of this method of diagnosis in the very severe renal ruptures. After mild or moderate traumas, however we have carried out roentgen studies within a few hours of the time of injury, there have been no apparent ill effects in these cases and it is our belief that the examination is entirely safe if ordinary care is used in the selection of the cases.

MALUNITED COLLES' FRACTURES

WILLIS C. CAMPBELL, M.D.

MEMPHIS, TENN.

Malunion occurs more frequently following Colles' fractures than any other fracture. There is considerable disability, pain and deformity associated with this lesion, and the disfigurement is particularly unsightly in

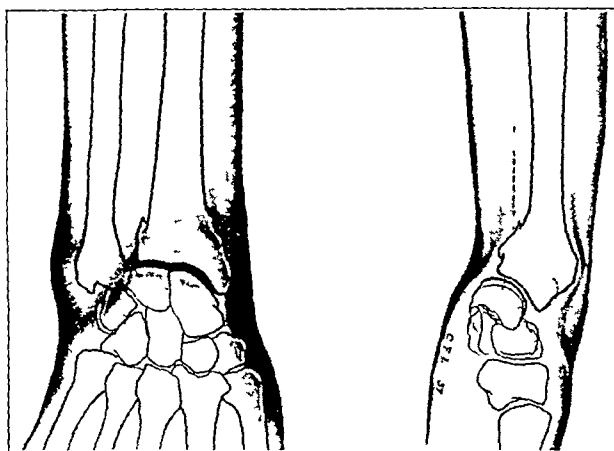


Fig 1—Typical malunited Colles' fracture with posterior angulation of distal fragment and radial shortening.

women. My object in this discussion is to present a surgical procedure which accomplishes restoration of anatomic alignment and function and a wrist of which the appearance is practically normal.

Malunion of this fracture is most common for several reasons. First, failure to reduce the fracture completely. Second, recurrence of deformity after apparent reduction and confirmation by the roentgenogram. Third, excessive comminution with radial shortening. This occurs most frequently in elderly persons and rarely under the age of 45, owing to difference in structure of the bone. With the most efficient treatment, reduction may be accomplished but not always maintained, so that a certain percentage of malunion of moderate degree can be considered legitimate and excusable. This is particularly true if the articular surface of the radius is markedly comminuted. Fourth, complete rupture of the radio-ulnar ligaments with undue mobility of the lower extremity of the ulna.

Fifth, the possibility of a recurrence of the deformity if active motion and physical therapy are instituted at an early date, before consolidation is complete.

Malunion of sufficient degree to impair function in the wrist materially creates an unsightly cosmetic appearance which is well known. On examination the hand is at a grotesque angle to the forearm, owing to the radial shortening with the wrist in abduction, there is a dorsal prominence of the wrist if the backward

angulation has not been corrected with the head of the ulna protuberant laterally and anteriorly.

The wrist is usually wider than the normal particularly if the fragments were impacted or comminuted. Because of disuse there is usually considerable trophic change of the fingers with stiffness of the interphalangeal joints. Motion of the wrist is particularly limited in flexion and adduction with varying amounts of pain on motion.

Roentgenographic examination reveals the styloid process of the

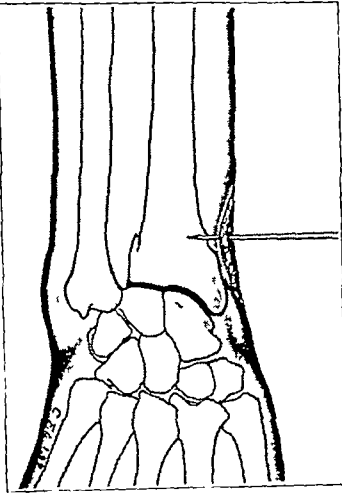


Fig. 2.—Osteotomy of the radius three-fourths inch proximal to the articular surface.

radius at the level of the styloid of the ulna, or it may be even shorter, there is widening of the distal portion of the radius. The lateral view shows varying angulation of the articular surface from normal forward and downward tilt to marked backward displacement and angulation. In those above 40 there is often osteoporosis of the bones of the wrist and hand to a pathologic degree.

Owing to the marked variation as to the amount of bony deformity, differentiation must be made between the borderline cases which will respond to physical therapy with serviceable wrists and those in which surgery is expedient.

Two entirely different surgical principles are employed in malunited fractures: one restoring function by a compensatory procedure, the other by reconstituting normal anatomic relationships. By resection of a section of bone from the distal portion of the ulna some function may be restored, the logic of which is that the chief disability is due to limitation of rotation of the distal radio-ulnar articulation. This in no way restores the normal mechanics or contour of the wrist but is entirely compensatory.

A simple osteotomy of the radius may restore function of material degree and reduce the backward angulation but does not correct the abnormal contour of the radius and ulna.

The most efficient procedure is a plastic operation of the bone whereby the normal angle of the articular surface is restored, the radial shortening corrected and the prominence of the distal end of the ulna removed, thus reproducing normal external and bony contour. The technic of the operation is as follows:

A lateral incision is made over the lower extremity of the radius about 2 inches in length through the skin and superficial fascia between the brachioradialis and the abductor pollicis longus and the extensor pollicis brevis. By careful dissection the line of fracture is

exposed. A transverse osteotomy is made through the radius about three-fourths inch to an inch above the distal articular surface, after which correction of the posterior angulation of the lower fragment can be made by acute flexion of the wrist joint so that the lower fragment is angulated slightly downward and forward. In this position a hemostat can be inserted between the fragments and opened with moderate force, thus separating the fracture surfaces and demonstrating the amount of increase that can be obtained in the length of this bone. A skin clip is now placed so as to close this wound temporarily.

An incision is then made for about 2 inches over the medial aspect of the lower extremity of the ulna through the periosteum, which is stripped off of the inner half from above downward, exposing the articular surface and the styloid process. With a small osteotome the inner half or third of the head and inner portion of the shaft is severed from below upward, thus securing a free graft of bone about 1 inch in length and about one-half inch in thickness at one extremity and tapered at the other. This graft is placed in a covered sterile pan or sterile towel.

The free graft of bone is now trimmed with bone forceps to make a pyramidal wedge with a base on the dorsal as well as the lateral aspect, which is inserted into the space between the fragments. The dorsal wedge maintains the normal angle; the lateral wedge prevents recurrence of radial shortening. Care must be taken that there is slight overreduction of the lower fragment, that is, slight anterior angulation. Both wounds are then closed as a routine and dressed with small gauze pads. On inspection the external contour should be approximately normal except that the head of the ulna may not be prominent. The lateral dimension or width of the wrist joint should be normal and on palpation the lower extremity of the styloid process of the radius should be distal to that of the lower extremity of the ulna.

A sterile flannel bandage is placed from the metacarpophalangeal joints below to just above the elbow, and the sugar tong cast or molded plaster anterior and posterior splints are applied. While this is consolidating, the forearm is held in midposition the wrist in slight flexion, with pressure over the dorsum of the wrist so as to make the posterior capsule of the wrist joint tense, thus maintaining the lower fragment of the radius.

A roentgenogram is then made which should demonstrate practically normal anatomic alignment; the lateral view will show that the normal plane of the lower articular surface of the radius has been restored while the anteroposterior view will show that the styloid process of the radius is about one-half inch lower than the lower extremity of the ulna; the ulnar styloid process

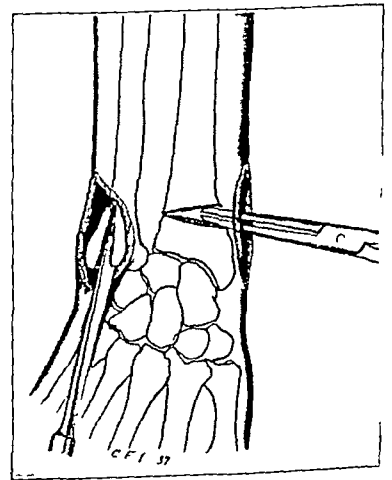


Fig. 3.—Hemostat inserted between fragments to correct radial shortening; pyramidal wedge of bone removed from ulna.

having been excised. Roentgenograms should be made through the plaster splint at the end of one week and two weeks, in a routine manner, to determine position and thus adjust any slight recurrence of deformity. After one month the plaster splint is removed, roentgenograms are made and a small interior metal splint is applied with straps and buckles to allow frequent removal for active and passive exercises and physical therapy.

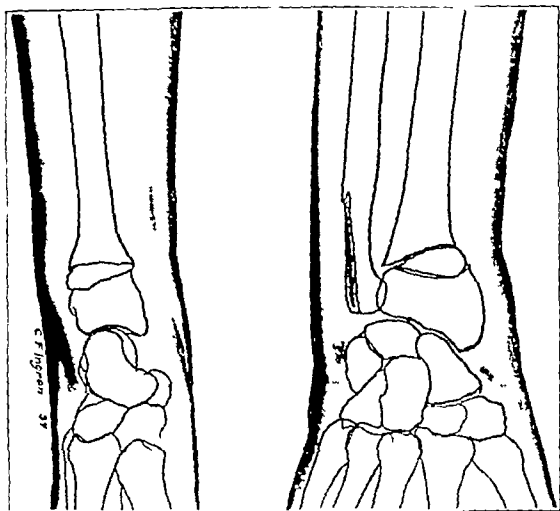


Fig. 4—Posterior angulation corrected by dorsal wedge of graft; radial length maintained by lateral wedge of graft; prominence of ulna removed.

The question naturally arises as to whether there is a probability of inducing delayed union or nonunion with recurrence of deformity or tenosynovitis from prolonged fixation. In answer to such a possibility, union in all cases has been accomplished in about the same time as in fresh fractures, though protection is continued for a period of eight weeks. As in other locations in the extremities of long bones in which an elongation has been accomplished by insertion of an autogenous graft such as the malunited fractures of the condyles of the tibia, union has not been delayed in a single case, nor has the graft undergone atrophy or sequestration but in all has healed and functioned.

END RESULTS

Surgical procedures have been carried out in forty-one cases of malunited Colles' fractures, twenty-two were simple osteotomies of the radius, nineteen were plastic procedures on the bone as described.

A reasonably high percentage of function was restored by osteotomy alone but the radial shortening and prominence of the ulna were not corrected. Thus except for correction of the angulation of the distal fragment little was accomplished toward normal anatomy.

The results from the plastic procedure on the bone have been uniformly excellent, meaning that contour is approximately normal and function restored to a material degree.

Of the nineteen cases eleven end results are excellent and seven are unknown. One case has not been entirely satisfactory, as there was excessive mobility of the lower extremity of the ulna due to ruptured interarticular fibrocartilage and it is too early to determine the amount of function that will be secured. Of the seven cases in which the result is not known, two were progressing satisfactorily when last seen so much so

that normal function could be predicted. The average age of the patients was 45 years with the oldest 66 and the youngest 29. The length of time from injury to operation varied from one month to one year, with an average of four and a half months.

The advantages of this procedure are that practically normal function is secured in a high percentage and an unsightly deformity is corrected which materially adds to the comfort of the patient.

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ABSTRACT OF DISCUSSION

Dr. FRANK D. DICKSON, Kansas City, Mo.: Dr. Campbell has brought out that malunion of the Colles' fracture is a disabling condition particularly in industrial cases. The disability is the result of two things: first the incorrect alignment of the articular surface of the lower end of the radius and second shortening of the radius which brings about a disturbed relationship between the lower end of the radius and the ulna resulting in limitation of flexion and extension, limitation of abduction and adduction and limitation of pronation and supination. Another thing which I think he did not mention which is found frequently is the disturbing pain and discomfort about the lower end of the ulna resulting from its displacement and malalignment with the radius. All surgeons have been disappointed in the results of simple osteotomy in these cases; at least I have although the results secured by shortening the ulna to alter the malalignment between it and the radius have been fairly satisfactory. Such an operation, however, does not correct the disturbance of the lower articular surface of the radius. Dr. Campbell's operation seems very effectively to correct the malalignment between the radius and the ulna and also to restore the normal contour of the lower articular surface of the radius. I will certainly, in the future, give this procedure a very thorough tryout and shall hope to get the excellent results which Dr. Campbell has shown.

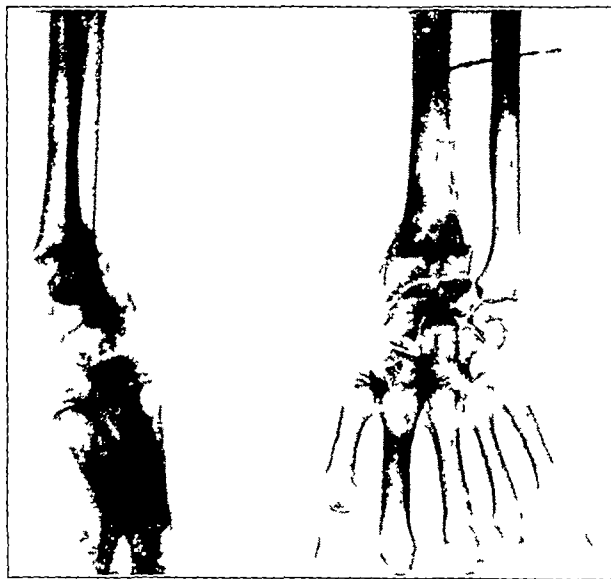


Fig. 5—Malunited Colles' fracture.

Dr. GEORGE E. BENNETT, Baltimore: I presume that a great many men in the audience have been utilizing bone grafts to fill in the space after an osteotomy has been done for the correction of a Colles' fracture. The technic which Dr. Campbell has described is certainly the one I am going to try the next time it is necessary for me to operate for the correction of this deformity. I have been taking grafts from the head of the tibia and placing them in the osteotomized area for many years, because if one does a simple osteotomy and brings the hand down in its corrected position a much longer healing period is required. In most cases I do an oblique osteotomy

of the ulna to correct the deformity. There is one point I should like to stress, which Dr. Campbell did not mention. Often patients with an old, malunited Colles fracture show a great deal of disturbance of the muscular and soft tissue of the hand, a fibrosis and an interference of circulation. In my early experience I operated in the presence of this condition at the end of, say, eight weeks doing an osteotomy and a correction, only to find that recovery was very slow. So for the past fifteen years I have made a practice of instituting physical therapy and getting the hand into the best condition possible before operation, thereby lessening the period of convalescence and securing better function of the hand. I think that if one attempts to do this operation before the soft tissues have reached their maximum recovery the results will not be as good as if sufficient physical therapy had been carried out before operation.

DR. DONALD C. DURMAN, Saginaw, Mich. For about ten years I have done an operation which is more simple but similar to the one described by Dr. Campbell. The operation and a small series of cases was reported in the *Journal of Bone and Joint Surgery* a year ago. I feel that it is worth

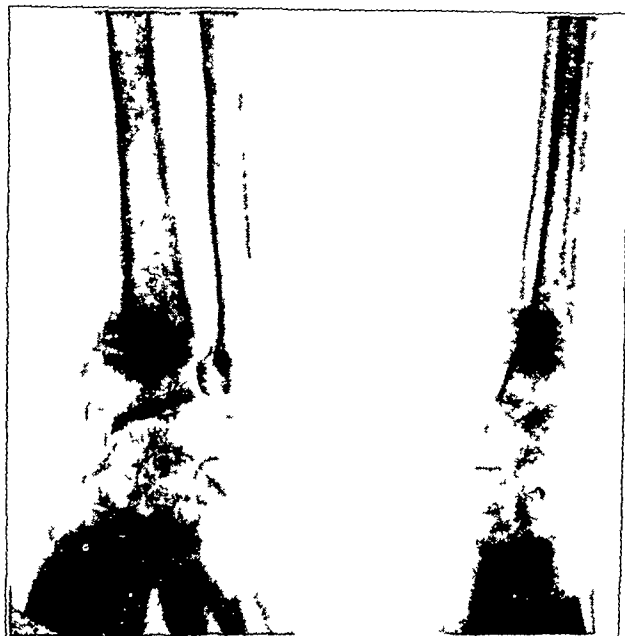


Fig. 6—Same case as in figure 5 three months after operation. Radial shortening and posterior angulation have been corrected and prominence of the ulna has been removed. Note function of pyramidal wedge.

mentioning here. An osteotomy through the fracture line is done on the dorsal surface, as described by Dr. Campbell. The ventral portion of the cortex is then fractured subperiosteally. Following this a graft of suitable length and breadth is cut longitudinally from the distal end of the upper fragment of the radius and is fitted transversely in the line of osteotomy. The graft holds the distal fragment in normal position. By making one end of the graft slightly broader than the other it is possible to correct the radial deviation of the hand. Resection of the distal end of the ulna has been found unnecessary to secure a good cosmetic result. After the graft is wedged into the line of osteotomy it is practically impossible to displace the lower fragment. In all my cases bony union has been well advanced at the end of three weeks. Two weeks after operation, plaster dressings are removed and replaced by an elastic bandage. All cases have had a very satisfactory functional and cosmetic result.

DR. WILLIS C. CAMPBELL, Memphis, Tenn. Some one has asked how I anchor the triangular ligament. That is usually done by suturing it to the adjacent periosteum or to the bone by means of a hole drilled through the ulna. As for the graft it is taken subperiosteally. I thoroughly agree with Dr. Bennett that these patients should not be operated on until after all acute symptoms have subsided and the structure is as near

normal as possible. If there is an extensive thickening or unusual edema of the hand which often occurs in elderly persons, I institute physical therapy as a preliminary measure. I suppose grafts have been taken from the tibia or the radius higher up, but it does not decrease the broadening of the wrist. The cosmetic results are of considerable importance particularly in women. I can see no reason why the extra incision should not be made and sufficient bone removed. The main point in this operation of course, is the elongation of the radius.

THE CARE OF THE FEET IN CHRONIC ARTHRITIS

JOHN G. KUHN'S, M.D.
BOSTON

The joints which are affected most frequently by chronic arthritis are those of the feet and the hands. Sometimes the disease subsides quickly but in most instances some permanent damage remains in these joints. More attention is usually given to rehabilitation of the hands, and adaptation in use is more readily obtained. Persistent disability of the feet however, is frequently observed. Normal activity and work are prevented by deformity, stiffness and pain. If the patient remains ambulatory, effective treatment is difficult and often impossible. Deformity and pain in the feet may increase after the arthritis is apparently quiescent as determined by both clinical and laboratory tests. Much, if not all, of the disability can be prevented by adequate early treatment. Deformities can often be corrected when the disease is quiescent, and a fairly close approach to normal walking may again be obtained. It is the purpose of this paper to outline the general measures which were found most helpful in restoring function in the feet of over 1,200 patients suffering from chronic arthritis who were treated for this special disability at the Robert Breck Brigham Hospital.

The deformities which develop in the feet do not differ greatly in the two great types of chronic arthritis, atrophic and hypertrophic arthritis. While there is usually greater pain and more rapid progression of deformity in atrophic arthritis, both types lead primarily to limitation of motion in the tarsal and phalangeal joints. The muscular weakness which accompanies this restriction of motion is, with weight bearing the chief factor in the progression of deformity.

Chronic arthritis in its early stages usually presents the same symptoms which are caused by chronic strain. Differentiation can usually be made from the history of progressive impairment of the general health, involvement of other joints and stiffness of the feet after rest which lessens with continued use. The swelling is variable in degree but more widespread and not limited to a special location (fig. 1). Limitation of motion in the midtarsal joints is one of the most common early symptoms.¹ The blood sedimentation index is elevated in most instances. Roentgenograms, which usually show nothing abnormal at the onset of the disease except swelling of the soft tissues, show progressive bony atrophy, clouding of the joint spaces and increasing narrowing and irregularity of the articular surfaces.

From the Robert Breck Brigham Hospital.
Read before the Section on Orthopedic Surgery at the Eighty Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1937.
1. Swaim, L. T. and Kuhn's, J. G. Prevention of Deformity in Chronic Arthritis, the Lower Extremity. J. A. M. A. 94: 1,43 (May 31) 1930.

These symptoms and these changes in the feet will be observed in about three fourths of all patients with early chronic arthritis. When they appear adequate treatment should be given, because subsequent deformity and lasting disability can be avoided. The only certain method of preventing future disability is to avoid weight bearing until the pain and swelling in the feet

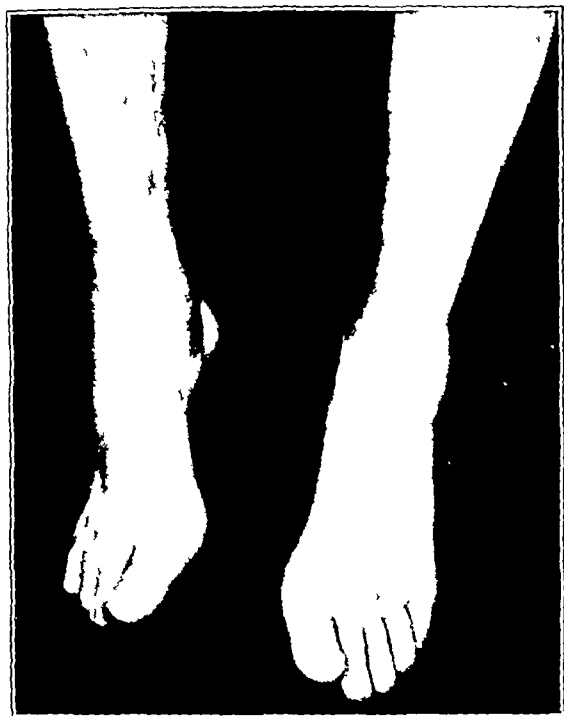


Fig. 1—Early arthritis of the foot with generalized swelling about the ankle and spreading of the forefoot

subside. They usually do so rapidly, in a few days or several weeks. Heat in any form, but particularly in the form of hot foot baths, is helpful. If pain persists after the patient has been put to bed some method of immobilizing the foot should be employed. The simplest means is a well fitting plaster cast holding the foot in the normal weight bearing position. The posterior halves of such casts can be used only at night, when the patient has less pain. As pain and swelling subside exercises are begun to strengthen the muscles which support the foot.

Before the patient again becomes ambulatory, proper shoes and adequate support should be given to prevent strain. If this is not done a recurrence of the symptoms will usually be seen as soon as the patient begins to walk, and progression in deformity and extension of the arthritis will be observed. In general when arthritis is present, shoes should be sufficiently wide to avoid pinching the foot when weight is borne, they should have low, broad heels and firm, thick soles. Added support should be given if it is needed to maintain the normal weight bearing position of the foot. The foot should not roll inward, and a line continued downward from the mid patella should cross the foot at about the crotch between the first and second toes (fig 2). Added support for the foot is sometimes given by raising the front inner corner of the heel one-fourth inch, often a foot plate is necessary temporarily. Strapping of the foot where the skin will tolerate this procedure is a useful measure until muscular strength returns.

Exercises should be continued until the foot is strong. Strain on the feet cannot be permanently relieved unless the whole body is carried properly, for faulty weight thrust and muscular balance will be reflected in foot strain. Attention must be given to the posture of the whole body so that normal function of the muscles supporting the feet will be possible.

If inadequate treatment or no treatment is given and the arthritis remains, increasing deformity usually occurs. The deformity most commonly seen is one with the foot stiff in valgus (fig 3). In this position the irritated tarsal joints can be held rigidly by the muscles and motion at the ankle joint can be prevented. In walking however, it causes marked strain on the supporting ligaments of the foot and the strain is soon transmitted to the knee and the hip. When rigid valgus has developed, changes take place in the anterior part of the foot. Because weight bearing is faulty and because normal use of the intrinsic musculature of the foot is prevented, the muscles atrophy and a widening of the anterior part of the foot is seen, a flattening of the so-called anterior arch. This is followed by undue pressure on the heads of the metatarsal bones, and the symptoms are usually pain and tenderness. Pain may be referred along the digital nerves to the toes. If the shoes do not fit properly, the deformity progresses more rapidly.

When this degree of deformity has come, disability is severe, and the patient usually walks with great difficulty. The severe strains, which come chiefly on the foot and the knee aggravate the arthritis, and no subsidence of the inflammatory processes in the joints can be expected unless the deformity is corrected. Avoidance of weight bearing will bring temporary help, with a recurrence of symptoms when the foot is again used. Forceful correction of the rigid valgus may be necessary. This can be done most easily by the repeated application of adhesive plaster, a little greater correction of the deformity being secured with each application. In cases of more resistant deformities, a succession of plaster casts will sometimes bring correction. In the case of a very resistant foot, if the arthritis is quiescent, manipulation with the patient under anesthesia is indicated, followed by fixation of the foot in varus until the swelling and pain have subsided. When weight bearing is again undertaken adequate support of the foot is needed until normal strength has returned.

When weakening of the intrinsic muscles of the feet and spreading of the forepart of the foot persist, two other deformities develop hallux valgus and contracted



Fig. 2—A the normal weight bearing line which crosses the second toe. B faulty weight bearing line which comes to the inner side of the foot

2 Brown L. T. Consideration of the Action of the Foot from an Anatomical and Mechanical Standpoint. *Am J Orthop Surg*, 10 13 1912

3 Morton D. J. The Mechanism of the Normal Foot and of Flat Foot. *J Bone & Joint Surg*, 6 50 (April) 1924

toe deformity. If there is much arthritic involvement of the metatarsal and phalangeal joints, these deformities develop much more rapidly. The hallux valgus follows the spread of the anterior part of the foot, owing to the faulty weight thrust in valgus, the pressure of the shoe and the pull of the adductors of the great toe, which have a greater mechanical advantage when the forefoot is spread. The deformity of the toes comes



Fig. 3—Rigid valgus with deformity of the great toe and dorsal contracture of the other toes.

from the depression of the heads of the metatarsal bones and from a more direct pull of the extensor tendons. This deformity of the proximal phalanx in dorsal extension is soon followed by subluxation of the proximal phalanx, usually lateral to the metatarsal head. With the osseous changes which accompany arthritis, marked deformation of the metatarsal heads and of the phalanges is seen (fig. 4).

Operative correction is not always necessary in the early stages of these deformities. Temporary cessation of weight bearing and exercises to develop the flexors of the toes and the intrinsic muscles of

the forefoot will help greatly. The chief concern is adequate support to the anterior part of the foot. This may be obtained by a foot plate which raises the forefoot medially to the second, third, and fourth metatarsal heads. Repeated plaster strapping and a leather cuff fitted about the foot just proximal to the first and fifth metatarsal heads are also useful measures.

When rigid deformity is present and the arthritis is inactive, a manipulation of the toes into flexion with the patient under anesthesia may be required. After the manipulation the toes can be held in plantar flexion by adhesive strapping for several days. Repeated manipulations will at times result in normal function of the toes. When subluxation of the proximal phalanx persists and there is marked deformity of the joint, the most rapid and usually the most satisfactory result is obtained by the operative removal of the distal half of the proximal phalanx. If the hallux valgus is severe, operative correction by removing the proximal portion of the first phalanx of the great toe usually gives the best functional result. Extensive reshaping of deformed bones has not proved a desirable procedure. After operation marked changes take place in the atrophied bones as the result of function. The simplest and least traumatic surgical procedure gives the best end result. Operative procedures are undertaken only when the arthritis is quiescent.

Ankylosis of the phalanges is not commonly seen. When it has occurred, removal of the entire proximal phalanx has given painless function without the subsequent development of calluses under the toes. This

operation has also been performed in cases of complete ankylosis of the first toe and the toe has become painless and useful. In cases of extreme deformity amputation of all the toes and occasionally removal of the heads of the metatarsal bones have been carried out. In no case have these procedures proved to be wise. A long foot plate has been required subsequently for the relief of pain. Calluses have developed under the forepart of the foot, since the rigid foot cannot adapt itself to the changed pressure of weight bearing. The functional disability has eventually become greater than before operation.

Hallux rigidus, with its limitation of dorsiflexion in the great toe, a deformity which develops not uncommonly in cases of hypertrophic arthritis, often produces great pain in walking. It can frequently be relieved by a long plate or by greater rigidity in the sole of the shoe. When these simple measures are not effective removal of the bony overgrowth on the dorsal surface of the metatarsal head will relieve the symptoms. Some times removal of the proximal third of the first phalanx of the great toe is necessary to permit painless motion in the first metatarsophalangeal joint.

One of the most disabling deformities is ankylosis of the tarsal-metatarsal joints. With this deformity there is loss of all flexibility in the forefoot. Usually the ankylosis is associated with a flattened anterior arch and flexion deformity of the toes. The metatarsal bones consequently become fixed in a position of increased plantar flexion. Calluses form rapidly, and pain is referred to the heads of the metatarsal bones. Occasionally the ankylosis can be broken by manipulation but usually an operation is required. The simplest procedure is removal of the proximal half inch of the metatarsal bone (fig. 5). This produces pseudarthrosis and permits movement of the metatarsal bone. When



Fig. 4—Roentgenographic appearance of chronic arthritis of the foot of four year duration. There are ankylosis of the tarsal joints and of the tar metatarsal joints and extreme deformities of the toe.

contracture has been present a long time this procedure may not be sufficient to permit motion of the distal end of the metatarsal bone. An osteotomy just proximal to the head of the metatarsal bone with the distal fragment held in a dorsiflexed position until healing has occurred will permit fairly good function but with severe contractures this procedure is usually not

as satisfactory as the removal of the head of the metatarsal bone. The head of the first or the fifth metatarsal bone should not be removed, since this disturbs seriously the balance and the weight bearing of the foot.

Ankylosis in the tarsal joints rarely yields to manipulation. If a fair weight bearing position of the foot cannot be secured with proper shoes and foot plates in operative correction of the deformity is indicated. The most useful procedure is a wedge osteotomy through the subastragalar joint or through the dorsum of the foot with the foot held subsequently in a good weight bearing position while the site of the osteotomy heals.

Spurs are frequently found in feet troubled by arthritis. They occur most commonly on the anterior plantar surface of the os calcis. They are also seen on the dorsal surface of the astragalus and tarsal scaphoid (fig 5). They are seen more often when there is no history or laboratory evidence of a gonorrheal infection than in the presence of such infection. We have come to feel that they are the result of chronic strain at points of ligamentous attachments. In the past ten years none have been removed by operation. When a proper weight bearing position of the foot has been obtained and the foot strain has been relieved the symptoms have disappeared in all but a few cases. In these temporary protection of the spur by a pad cut to surround it has given relief.

A disability constantly associated with arthritic involvement of the feet is epidermomycosis. The usual clammy condition of the skin, with impaired venous return, seems to offer an excellent medium for the growth of such infection. The infection yields readily to the usual remedies, but reinfection often occurs until the arthritis becomes quiescent and the circulation in the foot improves. When it has not been treated, healing of operative wounds has been markedly delayed.

Both local and systemic measures should be used to regain function in the foot crippled by arthritis. Treatment of the foot itself is inadequate, for disability will tend to recur unless the disease becomes quiescent. In treating deformities of the foot, one must appreciate the effect of contractures of the hip or the knee or of faulty posture on the function of the foot. An understanding of the disabilities which may arise in the feet and careful attention to preventing or correcting them will lessen greatly the permanent disabilities which follow chronic arthritis.

CONCLUSIONS

1 In chronic arthritis the feet are frequently attacked. They are often neglected in the treatment of the disease.

2 Deformities develop insidiously which can be prevented in the early stages by normal weight bearing and by proper support of the feet in walking until the disease is quiescent.

3 When there is extensive stiffness and pain, weight bearing should be avoided until the pain subsides.

4 With extensive deformity, operative procedures are often required. The simplest and least traumatic procedures to secure a good position for function will give the best result.

372 Marlborough Street

ABSTRACT OF DISCUSSION

Dr. LOUIS E. PAPURT, Cleveland: Dr. Kuhn has brought out that good body alignment and function especially of the knees and hips, are essential in the restoration of good function of the feet. Conversely, many an excellent work of reconstruction or preventive surgery of the knees and hips has been nullified by neglect of the feet. There are two points that I wish to add to the author's comprehensive outline. 1 Reports by Dr. Kuhn and his associates have indicated that at least 40 per cent of arthritic patients have intercurrent diseases. This means frequent periods of disability and bed rest. During these periods laxity and atrophy of the muscles and ligaments of the feet take place. A little preventive medicine in the form of heat and massage to the muscles plus active exercises to maintain muscle tone, and perhaps a soft arch prop as a temporary splint, will greatly lessen the post-illness disability and prevent recurrences of the deformities of the feet which may have taken so much time and effort to correct. 2 I have noticed in patients especially middle aged stout women, who have suffered from arthritis of the ankles and feet which may be quiescent, a hypertrophy of the fibro fatty tissue of the sinus tarsi or of the fat under either malleolus or even hypertrophy of the ankle synovia. These fat pads have been the seat of chronic passive congestion with fibrosis or actual inflammation and are often quite tender and painful. They tend to prolong the disability, and simple excision has given gratifying relief.

Dr. JOHN P. STUMI, New York: An exceedingly important point in Dr. Kuhn's paper is the early use of correct footwear to prevent deformities. If medical colleagues will give orthopedic surgeons the opportunity to treat patients at the onset of arthritis deformities can very frequently—almost always—be prevented. Furthermore when feet are just beginning to show arthritic changes, correct footwear and adequate rest will do much to control the inflammatory process and maintain strong weight bearing extremities. In arthritic feet with definite mid tarsal distortion associated with spasm or fibrosis, rigid foot plates have given me the best results. It was with hesitation that rigid foot plates were employed because of the fear that they would produce added discomfort in already painful feet. However, manipulation either with general anesthesia or with injection of the superficial peroneal nerve with procaine hydrochloride followed by immobilization, has been unsatisfactory. Best results have been obtained by personally making plaster of-paris impressions of the distorted feet having plates made to conform to these impressions without any effort at correction insisting that the plates be made of a metal malleable enough to be readily reshaped in my office, adjusting the plates at frequent intervals to obtain correction, and carrying out the adjustments in an exceedingly careful and gradual manner. By this treatment the static strain on the soft tissues and hence the discomfort has been relieved and the patients made ambulatory in the shortest time.

Medicine and Surgery Tend to Converge—And in all of this new visceral surgery it seems to me that the physician has merely come to do his own operating, that internal medicine is merely becoming surgicalized much as military surgery has become largely medicalized.

And what is happening in these specialties is an indication of the tendency in the two major branches, for internal medicine and surgery, as the treatment of disease grows less empirical unquestionably tend to converge.—Cushing Harvey, *Consecratio Medici* and Other Papers, Boston, Little Brown & Co, 1928.

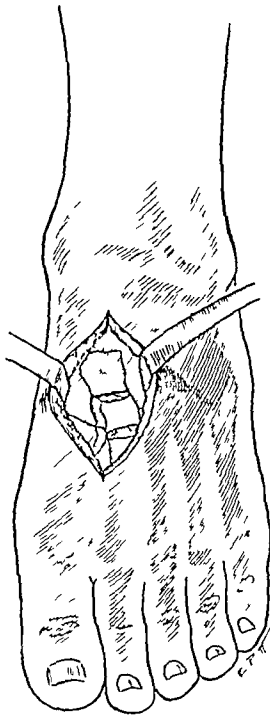


Fig. 5—Operative procedure for the removal of the proximal end of the metatarsal bone.

FOOT DISORDERS IN GENERAL
PRACTICEDUDLEY J. MORTON, M.D.
NEW YORK

Only a small percentage of patients with a disorder of the foot reach the orthopedic surgeon, the rest—an overwhelming majority—are left unaided to seek relief wherever they can find it. For years they have been exploited so extensively by unqualified, nonprofessional agencies as to create a unique situation and one that has been accepted or condoned by the profession with extraordinary complacency. Why should these common ailments of the feet be so obviously the "ugly duckling" or "unwanted stepchild" of medicine?

At the beginning of this century, textbooks on orthopedic surgery suggested two primary causes of foot trouble, applying them to the disorder in the longitudinal arch and also in the metatarsal region of the foot, they were (1) badly designed footwear and (2) weakened musculature. After having received broad acceptance and approval for so long a period, it might be expected that these interpretations of primary factors would by now be well fortified with statistical and factual evidence, but such evidence is strangely lacking.

The original impairment of "faulty footwear" applied to shoes that were worn before the turn of the

proper. Since that time, however, and especially since the war, great improvements have been made both in the design and in the fitting of footwear. For men and children, shoes are now constructed closely along anatomic lines, and for women also conservative, well designed models are amply available. The high heel types are admittedly vicious, especially when worn continuously, they account chiefly for the far greater frequency of foot trouble in women than in men. But with this particular exception the severe criticism aimed at nineteenth century footwear does not have the same application today. Continuation of that criticism seems to be more a matter of habit than of reason, it has been fostered and sustained most loudly by the competitive claims of rival shoe merchants.

"Muscular weakness" has been given as the other primary cause of disorders of the foot. In the longitudinal arch the characteristic "weak ankle" or pronated posture of the foot is interpreted as due to weakness of the muscles on the inner side of the ankle and foot (the tibial muscles and long flexors of the toes), while in the metatarsal region "weakness of the muscles and ligaments" is vaguely referred to as permitting a falling or depression of an alleged "anterior transverse metatarsal arch."

Examinations of muscular strength in normal and pronated feet have shown individual differences in the comparative strengths of the supinators and pronators in the feet of all the persons examined, but these differences were so distributed among the normal and the pronated as to afford no significance whatever in their relation to abnormal posture.

The suggested "weakness of muscles and ligaments" in the forepart of the foot, permitting depression of an "anterior transverse metatarsal arch," is also vague at first, because there is no transverse arch formed by the heads (anterior ends) of the metatarsal bones as implied by that term and, second, from the standpoint of anatomy, there is neither a muscle nor a ligament in that part of the foot capable of sustaining such an arch if one were present.

Under thoughtful analysis, the given causes are not specific and concrete as basic factors should be in failing to supply an etiologic basis that clearly explains the mechanism of disorder they appear to be chiefly responsible for the lack of interest so generally shown

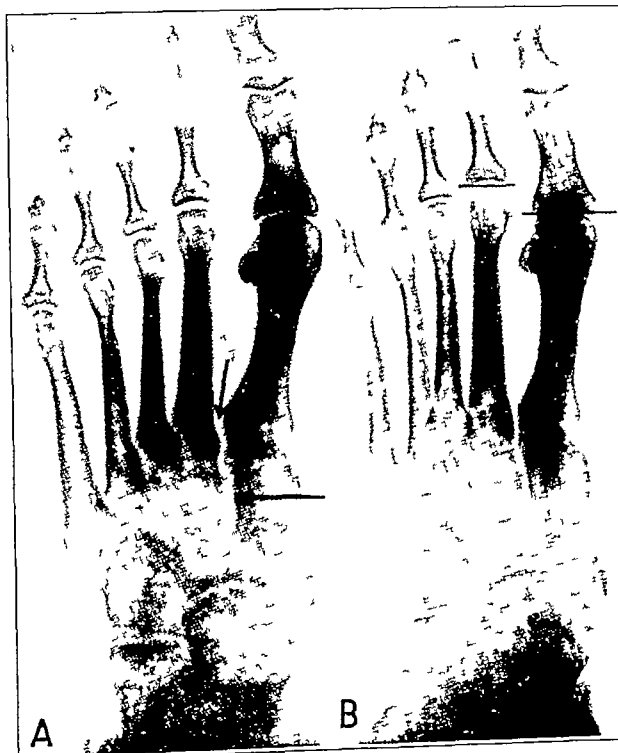


Fig. 1—A hypermobility of the first metatarsal segment is indicated by broadened line of lesser density between the cuneiform bones. Note enlargement of the shaft of the second metatarsal compared with the third, fourth and fifth. B shortness of the first metatarsal. Note the similar increased development of the shaft of the second metatarsal.

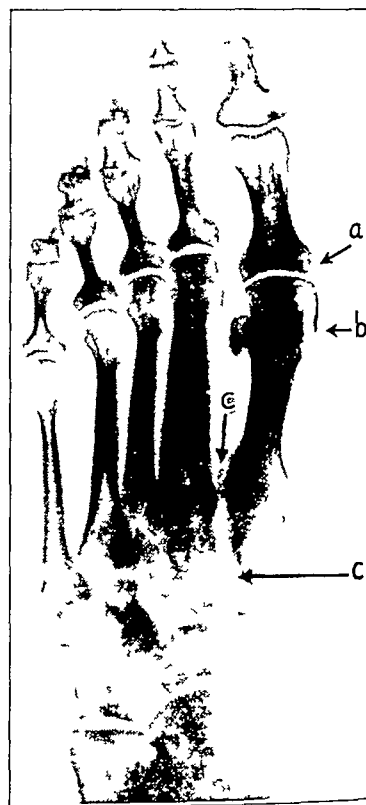


Fig. 2—Marked hypertrophy of the second and metatarsal in a foot of a middle-aged person with all three factors of deficiency of the first metatarsal present.

century and when they were designed and fitted with little consideration for the welfare of the foot. But even so, the injurious effects were limited chiefly to deformities of the toes and not to disorders of the foot.

by physicians. The studies presented here, reported in greater detail elsewhere,¹ disclose certain structural factors whose primary disturbing influence on the function of the foot is plainly demonstrable. They are described here because through accurate knowledge of primary causes general practitioners, as a group, can become the most important and effective agency in controlling the extensive incidence of disorders of the foot and in establishing a normal professional relationship with the public in this avoided field.

NORMAL PHYSIOLOGY

Studies in the past have been made chiefly from observations of the foot as a composite unit and in terms of total function, so that the values of integral parts have escaped due consideration. The importance of the latter phase in the analysis of any composite structure becomes obvious when it is recalled how the total power output of an engine can be seriously affected by the maladjustment of some minor part or how the volume and tonal qualities of a radio can be ruined by defect in a single unit. In such instances, only through familiarity with what each part of the structure should perform can a person knowingly locate and correct the trouble. Such an analysis of segmental values has been employed as the basis of the present investigations, and a physiologic, rather than a morphologic, approach has been followed.

Human feet are designed for two extreme types of function, they serve (1) as a stable base for standing erect—a relatively passive act because it calls for a minimum of dynamic (muscular) action—and (2) as levers in forceful locomotion (running and jumping) in which the dynamic action of the muscles strongly predominates. Walking, an intermediate type of function, includes modified phases from both of the extreme types of function.

In stance, half of the body weight is transmitted by the leg bones on each foot, where it is divided, a part passing backward to the ground through the heel, the rest being carried forward and distributed among the five metatarsal bones for transmission to the ground. It is important to distinguish this weight bearing function of the foot proper from the purely accessory action of the toes, because the latter are not involved in the actual support of body weight. This is easily demonstrated, for when a person stands erect he can lift his toes from the floor without any shift in the body's center of gravity. If he bends forward or intentionally shifts his weight in that direction, contraction of the flexor muscles pulls the toes into firm contact with the floor, thereby adding their length to the anterior stabilizing property of the foot. Body weight, however, is still being borne essentially by the metatarsal bones.

With the framework² of the foot thus recognized as the prime weight supporting structure, its elements of stability should be identified. It is triangular as viewed from above. The heel, representing the posterior corner of the triangle and being a single point of contact, is of itself without stability in any direction. The added contact of the forepart of the foot to the ground is necessary for anteroposterior stability, and its width through the spread of the metatarsal bones furnishes the necessary elements for stability in lateral directions.

A staticometer was designed to learn what each weight supporting segment contributed to the support of body weight and to the structural stability of the foot. The tests showed that, in normal stance, weight stresses are divided equally between the heel and the forepart of the foot, and, of basic importance to subsequent studies of foot disorder, it was found that the forward stresses were normally distributed on metatarsals 1 to 5 in the approximate ratio of 2, 1, 1, 1, 1 respectively. Since the sesamoid bones beneath the head of the first metatarsal serve as two points of contact for that bone, six points of ground contact are to be recognized in the forepart of the foot with each transmitting an equal share of body weight (fig 3a).

Thus in a person of 120 pounds (54 Kg) the distribution of weight in stance is as follows. To each foot, 60 pounds (27 Kg), to the heel, 30 pounds (13.6 Kg), to the first metatarsal, 10 pounds, or 4.5 Kg, (each sesamoid 5 pounds, or 2.3 Kg), to the second, third, fourth and fifth metatarsal, 5 pounds to each. These tests help to identify the foot not as a single arched

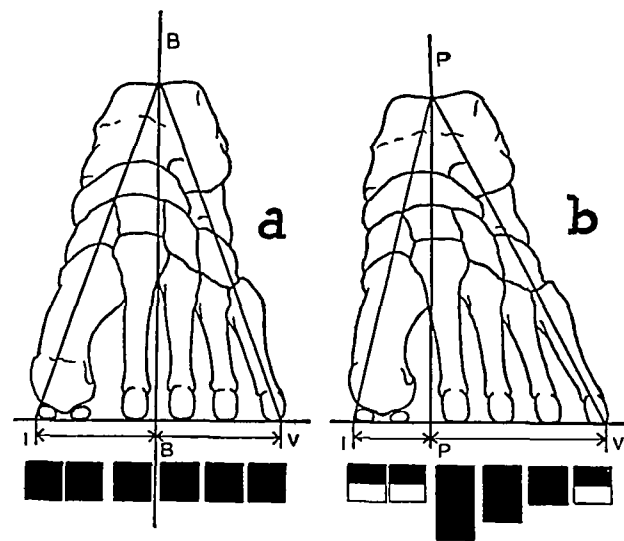


Fig. 3—*a* a normal ratio of weight distribution (2 1 1 1 1) indicated by equal sized squares. *BB* vertical plane of balance. *IB* and *BV* equal medial and lateral margins of structural stability. *b* first degree pronation. Note concentration on the second and third metatarsals. Also see figure 5A. *PP* vertical plane from center of ankle. Note reduced medial margin of stability (*IP*).

unit but as a series of five separate longitudinal arches united posteriorly in the heel. In these arches the adjustment of the plantar ligaments to the front segments is so accurate that in gaining supporting contact on a level surface the metatarsal bone of each longitudinal span receives only its apportioned share of the total load. Also, by locating between the second and third metatarsals an even division of stresses imposed on the forepart of the foot, one is able to identify an axis, or plane of balance, as passing through this point and through the centers of the ankle and heel. The width of metatarsal contact with the ground on each side of that axis (*IB* and *BV*) represents the equal margins of structural security that characterizes the foot in normal posture.

Standing involves continuous static strain for periods of greater or less duration. This is a type of strain which ligamentous tissue is specifically designed to withstand. Also it may here be noted that both to the rear and forward the static stresses are divided through the framework of the foot in close accordance with the pro-

1 Morton D J. The Human Foot. New York: Columbia University Press, 1935.

2 The term framework includes the bones and also the ligaments for like rivets in the steel framework of a building the ligaments are the essential binding elements that maintain the supporting units in position.

portionate stoutness of the six supporting segments, namely, the heel, the first metatarsal and the four lateral metatarsal bones

Forceful locomotion, the opposite extreme in function, presents quite different physiologic features from stance. When propelling force is applied on the heel by the calf muscles (*gastrocnemius* and *soleus*), body weight is levered forward along a second, or leverage, axis of the foot.³ This axis differs from the axis of balance in that it passes between the first and second metatarsals instead of the second and third. In the ideally designed human foot the heads of the first and second metatarsals are equidistant from the heel, so that when the heel is raised in locomotion the heads of these two bones act together as the fulcrum of leverage (fig 4A). The movement is helped by the bowstring action of the muscles located on each side of the ankle behind the malleoli, while at the same time these muscles act as sides of a trough to keep the movement balanced on the leverage axis.

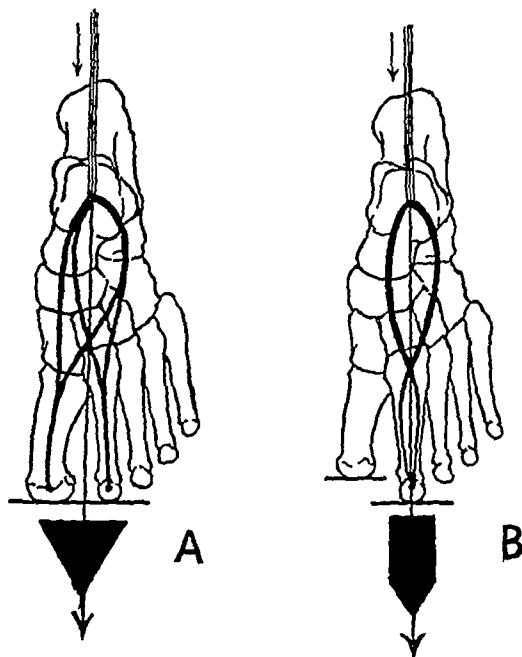


Fig. 4.—A axis of leverage indicated by the long arrow. The first and second metatarsals share the leverage stresses. B a short first metatarsal causes leverage stresses to be concentrated on the second metatarsal alone. Also see figure 5B.

In locomotion the weight stresses are thrown entirely on the fore part of the foot through two bony channels. The lateral stream passes toward the cuboid bone, where it is deflected medially by the peroneal muscles and by the three lateral metatarsal bones which act as auxiliary levers. In order to counterbalance the outward movement of the lateral stream, the medial stream is at first directed somewhat inward in conformity with the mild medial deviation of the neck of the talus. It is then swung more forwardly and laterad by the muscles acting on the inner border of the foot (*tibials* and *long flexors* of the digits). The two streams now converge on the two inner cuneiform bones and the bases of the first and second metatarsals, whence they are transmitted to the ground. Thus in forced locomotion the stresses are balanced on the axis of leverage, and the heads of the first and second metatarsals act together as the fulcrum.

³ Studies in the evolutionary development of human feet have shown that this leverage axis is a prehuman feature and that the longitudinal arch has been formed in direct relation to it. The axis of balance is a later acquisition attained only as the inner border became permanently arched.

In walking, the movement of these stresses is modified. In the early half of the foot's contact with the ground they are centered on the axis of balance and then swung toward the fulcrum.

In contrast to the continuous and milder static strains of stance, forceful locomotion introduces brief and violent strains and stresses, which converge on the forward inner corner of the triangular human foot, i. e., on the first and second metatarsals. The violence and concentration of these stresses would put a tearing strain on the plantar ligaments of these two medial segments were the excessive burden not absorbed by the posterior tibial and long flexor muscles. These muscles enter the foot in the vault of the longitudinal arch and therefore are located ideally to sustain the arched segments against the crushing force. The first metatarsal segment, in particular, is well protected by the flexor hallucis longus, the course of which runs immediately beneath it, while the intrinsic muscles within the foot also contribute directly to absorption of these concentrated stresses.

LIGAMENT VERSUS MUSCLE FUNCTION

In view of the widely held concept that the muscles are the chief means of supporting the longitudinal arch, it seems fitting to point out how specifically and differently the requirements of stance and locomotion concur with the distinctive functional qualities of ligaments and of muscles. Just as ligaments are uniquely adapted for the continuous and prolonged strain of static stresses in stance, so the brief, intermittent and violent stresses of locomotion are directly in accord with the known physiologic properties of muscle tissue. Such individual spheres of action indicate that the muscles are not employed to sustain the arch but that their function in stance is merely to hold the leg bones vertical on the foot by means of a light tonal tension. For example, the relaxation of the muscles in a fainting person does not alter the contour of the foot but it eliminates normal control of the leg bones in their position above the foot. In other words, the muscles on the two sides of the ankle act on the leg as stays on the mast of a ship, the purpose of the stays is to maintain the mast in proper relation to the ship's hull and not to pull the hull into a correct position beneath the mast. In both instances the foot and the hull are the stable basic structures while the leg bones and the mast are the mobile elements. Only a light tonal effort is normally required of the muscles to balance the leg bones in stance on a stable foot, but a strongly sustained contraction, as implied in direct support of the arch under body weight, is entirely incompatible with our knowledge of muscle physiology. It may therefore be concluded that, so far as the arch is concerned, stance calls only for ligamentous function while locomotion utilizes both ligamentous security and muscular protection and activity.

DISORDERS OF THE FOOT

Physiology indicates that intrinsic as well as extrinsic factors are to be considered in foot trouble. Leg muscles and shoes represent extrinsic factors because they are outside the foot itself. In contrast, intrinsic factors are those which, being located within the foot, affect its internal mechanism directly.

The heel is conspicuous in its size and in the importance of its functional role both in stance and in locomotion, but the postural security of the heel as well as of the entire foot is directly dependent on the radiating spread of the more lightly built metatarsal segments which gives the foot its breadth. Consequently the fore-

part of the foot is the prime factor in foot posture, and of its five segments the first metatarsal segment has been shown to be of greatest functional importance. In stance it is the essential stabilizing member on the medial side of the foot and normally supports twice the load carried by each of the others, in locomotion it alone with its associated muscles sustains half of the greatly intensified stresses imposed on the foot. Thus the first metatarsal segment is marked as so vital a unit to the mechanics of foot function that any defect or deficiency in it would impair the foot's entire mechanism. Also, because of its corner position in the foot's triangular framework the disturbance would involve to a greater or less degree both the arched inner border and the front border.

The two most common external signs of foot disorder are (1) a pronated, unbalanced posture and (2) callus formation on the sole of the foot, behind the second and third toes. Pronation occurs usually as "weak ankles" early in child life. Its long recognized association with trouble in the longitudinal arch has not only made it the best known sign of foot disorder but has established it also as a morphologic index by which the degree of trouble is estimated. Callus formation in the area designated is likewise typical of foot disorder but, since it does not develop as a rule until after physical maturity (25 years or more) has been attained, its significance is not so generally recognized.

Both of these signs point directly to a functional deficiency in the first metatarsal segment. Whenever such a deficiency exists, the stresses which this segment should normally carry are shifted and concentrated on the adjacent second. This phenomenon is consistently associated with hypertrophy of the shaft of the second metatarsal bone. Physiologic tests confirm this interpretation.

Two structural conditions have been identified which are directly responsible for the impaired functional qualities of the first metatarsal segment. They are (1) laxity of its plantar ligaments, allowing a dorsal hypermobility which prevents the first metatarsal from attaining firm supporting contact with the ground at the same time as the others (figs 1A and 5A) and (2) shortness of the first metatarsal bone, whereby the more advanced head of the second metatarsal must serve alone as the fulcrum of the foot's leverage action (figs 1B and 5B).

Dorsal Hypermobility (fig 1A)—Laxity of ligaments in the first metatarsal segment affects both distribution of weight and postural security. The double burden it normally supports in stance falls on the second metatarsal in the same way as when five men are carrying a heavy log and the man on one end lets go his hold—his share falls immediately on the man next to him. Also, through the relative noncontact of the first metatarsal, the medial margin of structural security is primarily reduced to the short distance between the normal axis of balance and the head of the second metatarsal.

The overloading of this more slenderly built bone causes its ligaments to be strained and stretched, and the foot pronates or rolls medially. If the hypermobility of the first metatarsal segment is slight, ground contact is quickly gained and the movement is arrested, but with the following modifications in function which characterize what may be designated first degree pronation (fig 3b). The vertical plane through the center of the ankle joint is now shifted between the first and second metatarsals. There is also a medial shift in weight

from the outer border of the foot, so that weight distribution has been changed to the approximate ratio of 1, 2, 1.5, 1, 0.5. Static stresses are still concentrated on the second metatarsal, but the first metatarsal has reassumed some weight bearing function, and its width now alone comprises the reduced margin of structural stability. Such feet are not appreciably impaired for the active function of locomotion (in fact, they are commonly seen among athletes), but they tire more easily under prolonged standing than feet with normal posture.

Where greater laxity in the plantar ligaments of the first metatarsal segment exists, pronation must proceed further before that segment acquires effective ground contact. Second degree pronation may therefore be considered the stage in which the center of transmitted weight on the ankle has moved medially until the vertical plane (passing through it and the central point of heel contact) projects forward through the head of the first metatarsal bone. The medial margin of structural stability is now eliminated, and only the muscles and the ligaments on the inner side of the ankle and foot remain to prevent greater unbalance in posture. Until

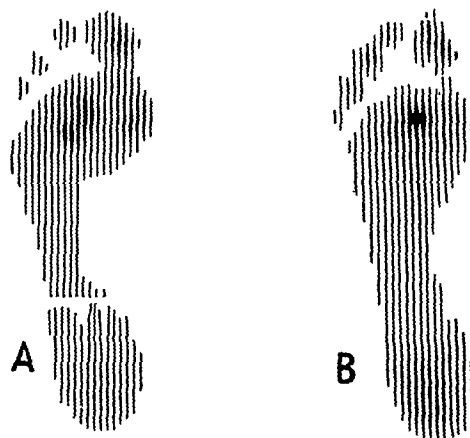


Fig 5—A a kinetograph print of the foot with dorsal hypermobility of the first metatarsal segment (fig 1A) showing concentration of leverage stresses on the second and third metatarsals in walking. B a similar kinetograph print of the foot with a short first metatarsal (fig 1B) showing concentration of stresses on the second metatarsal only.

contact of the first metatarsal with the ground is gained, weight distribution is increasingly disordered to a ratio approaching 0, 3, 2, 1, 0 (fig 1A). The exaggerated load on the second and third metatarsals introduces two sources of symptoms: cumulative strain of their basal joints, causing a local traumatic arthritis (usually subacute), and callus formation from intensive pressure on the skin beneath these metatarsal heads.

Such feet are definitely predisposed to joint and muscular strain both in stance and in locomotion. When standing is of more than brief duration, the lack of medial security allows the unbalanced posture to increase and, in order to prevent it, the muscles are kept in a constant state of hypertonic tension, they tire and yield, with the result that the unrelenting static stresses fall even more heavily on them. Eventually only the ligaments of the inner side of the ankle and foot remain effective to obstruct further unbalance and deformity.

The mechanical elements of locomotion are thrown out of order correspondingly. The pronated posture alters the position of the joint surface beneath the talus, depressing its inner margin (*sustentaculum tali*). Consequently body weight becomes deflected more and more heavily on the medial border of the foot and against the muscles on that side of the ankle. These muscles

must resist and redirect this exaggerated load back on the foot and on the metatarsal heads as the fulcrum. However, persons with second degree pronation may never manifest subjective symptoms if they lead sedentary lives and avoid physical activities in excess of the reduced capabilities of their feet.

The evidence indicates very clearly that the muscles are not primarily at fault in disorders of the longitudinal arch, on the contrary, it signifies that pronation is caused by lack of structural stability in the medial segment of the foot's framework and as a result the muscles suffer secondarily from abnormal overloading.

Third degree pronation, applied to more conspicuous cases of deformity, presents two distinct types, the rigid and the flexible flatfoot, with widely different ranges of clinical symptoms. Of course, all intermediate degrees between these two types are to be observed, as well as in the stages of advance from the milder to the more extreme degrees of deformity.

The rigid flatfoot results from progressive deformity and inflammatory changes begun usually at the stage of second degree pronation and exaggerated by continued

the critical stage. It covers the great majority of cases that present clinical symptoms. At this stage and prior to it, physicians have their greatest opportunity to employ corrective and preventive help with maximum success.

Shortness of the First Metatarsal Bone (fig 1B)—This factor impairs the effectiveness of the first metatarsal segment chiefly in locomotion, because the more advanced position of the head of the second metatarsal causes the latter to act alone as the fulcrum of the foot's leverage (figs 4B and 5B). When the heel is raised in locomotor effort, all the stresses must converge on, and be transmitted by, this more slender bone. The condition is an inherited one and its presence from birth causes the shaft of the second metatarsal to become increasingly hypertrophied throughout the physically active periods of life. The widening of its shaft results apparently from the convergence and crossing of the two streams of locomotor stresses, the thickening of the walls (cortex) seems due more directly to the exaggerated vertical stresses.

A short first metatarsal bone affects chiefly the basal joints of the second metatarsal segment by reason of the intensified breaking strains imposed on the latter's plantar ligaments. These strains, acting as repeated injury, produce a local inflammatory reaction of the metatarsal joints, which becomes gradually an actual traumatic arthritis, accompanied at times by an effusion tending to separate the bones. When this occurs, the normally close approximation of these bones is lost and minor movements are permitted which are highly irritating to the adjacent nerves (Morton's metatarsalgia⁴).

A short first metatarsal bone forms a very unfavorable combination with the high heeled shoes of women. Such shoes hold the foot at midpoint in the arc of leverage action, so that both in stance and in locomotion the second metatarsal bone is constantly subjected to a severe overloading of weight stresses.

Of similar effect as shortness of the first metatarsal, a third factor has been identified in a rearward position of the two small sesamoid bones that normally underlie the head of that bone. Since these sesamoids represent the contact points of the first metatarsal with the ground, whenever they are located more proximally toward the neck of that bone and posterior to the head of the second metatarsal they create a potential shortness of the former and affect the mechanism of the foot accordingly.

SYMPTOMS AND DIAGNOSIS

Functional deficiency of the first metatarsal segment furnishes a basis on which the widely diversified range of symptoms in foot disorders are easily interpreted and understood. The three structural factors identified may exist singly, but usually they occur in combination (fig 2). In either case their effect on the foot's mechanism is consistent and positive. They are to be regarded as primary causes because they directly reduce the functional capabilities of the feet. However, in order for clinical symptoms to appear, their presence must be supplemented by abusive function—abusive, not from the point of view of what normal feet can stand but because it is excessive to the subnormal capabilities of these feet. The abusive elements are of two major classes: (1) unfavorable conditions of function, which apply to environmental or personal factors, such as hard floors, city pavements, high heeled shoes and ill health, and (2) excessive degrees of function, such as long

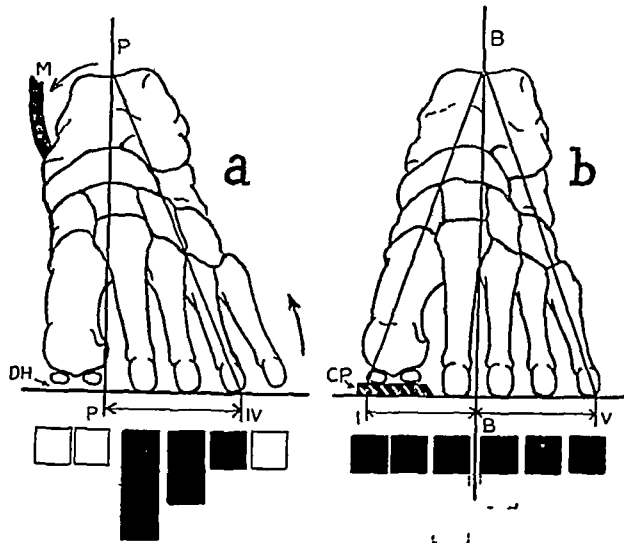


Fig 6—*a* a more advanced degree of dorsal hypermobility. *DH* lack of ground contact. Increasing pronation (indicated by arrows) with greater disorder in the distribution of weight. Note complete loss of the medial margin of structural stability. *b* use of compensating platform (*CP*) to correct distribution of weight and restore the medial margin of stability.

disordered function. Secondary faulty stresses are created which impose uneven and distorting pressures on joint surfaces and abnormal strains on ligaments. Alterations in the bones lead to a permanent loss of the arch. Arthritic and neuritic changes of a more lasting nature are established under the functional trauma. Vasomotor symptoms appear as a part of the nerve involvement. The advancing deformity causes further changes in weight distribution, the first metatarsal is forced to the ground more strongly and its load is steadily augmented as weight is shifted medially from the outer border of the foot.

Flexible flatfoot, as the other type, is traceable to an unusual degree of ligamentous laxity in early childhood, or congenitally. In these cases subjective symptoms are comparatively negligible but the deformity is conspicuous. Such feet are distinguished from normal but very low arched feet by their marked pronation, their greatly reduced functional capabilities and the typical flatfoot gait.

The progressive course of longitudinal arch disorder as discussed clearly stamps second degree pronation as

⁴ First described by Prof. T. G. Morton in 1876.

hours of work on the feet, violent sports and obesity. After subjective symptoms have once been established, another factor—traumatic inflammatory changes—has been added and must be reckoned with in the explanation of symptoms as well as in the scheme of treatment.

Symptoms are traceable to two primary sources: (1) uneven distribution of weight on the metatarsal bones with stresses concentrated chiefly on the second, and (2) loss of structural stability on the medial side of the foot.

Uneven distribution of weight is associated with all three of the structural factors. It is responsible for superficial and deep symptoms. The superficial symptoms are caused by excessive skin pressure and usually start as a burning sensation in the sole of the feet, later followed by callus formation under the middle metatarsal heads (especially the second). This callus may become thick enough to act as a foreign body and be an added mechanical source of local pain. Deeply, the strain of the basal joints sets up a traumatic arthritis, which in the more acute cases presents a characteristic area of deep tenderness (fig 7). Because of its close proximity to these joints, irritability or inflammatory involvement of the medial plantar nerve with the fanlike distribution of its branches accounts for the various types of metatarsalgic pain in disorders of the foot. The second source of symptoms, loss of medial stability, is more commonly caused by dorsal hypermobility than by shortness of the first metatarsal. Pronation muscle exhaustion and spasm, and pain from strained ligaments along the inner border and arch of the foot are its more characteristic symptoms.

All the foregoing symptoms may be regarded as primary because they are directly allied with the original phases of disorder. However, after the establishment of the inflammatory condition, symptoms and changes of a secondary nature make their appearance. The signs of nerve involvement predominate subjectively and increasing deformity objectively. Pain is extended up the legs and thighs to the back, while in the feet local areas of numbness, tingling or sharp pain develop. Vasomotor disturbances appear also, the feet perspire profusely, they may become discolored or mottled in appearance, and swelling may occur in the feet and ankles. In advanced cases of disorder of the longitudinal arch, the tarsal bones become altered in shape because of uneven, distorting contacts, and the foot is gradually depressed into fixed and rigid flatfoot deformity. In metatarsalgic cases progressive claw toe deformity is the more characteristic change.

The most valuable and accurate means of diagnosis is the dorsoplantar x-ray film of the foot with the x-rays centered on the middle cuneiform bone. Although x-ray examinations are rarely used in these cases, the evidence that they disclose of faulty function gives them the same relation to foot disorders as cultures to bacteriologic diseases.

The first feature to receive attention in the film is the presence and the degree of enlargement of the second metatarsal in comparison with the three outer metatarsal bones, because it is a definite index of abnormal distribution of functional stresses. Width of the shafts and thickness of cortex must be considered in the comparison, also age, as such hypertrophy is less developed in younger than in older persons.

Shortness of the first metatarsal, actual or potential, is identified by the position of its head and of its sesamoids in relation to the head of the second metatarsal (figs 1 B and 2).

Dorsal hypermobility of the first metatarsal segment is indicated in the x-ray film by a broadened line of lesser density extending backward between the medial and the middle cuneiform bone from the first intermetatarsal space (figs 1 A and 2).

A lateral x-ray view of the foot is desirable to complete examination data and is especially helpful in differential diagnosis.

Shortened Calf Muscles—There is one extrinsic condition which may be either an important direct or a contributing factor in functional disorders of the foot. It is a shortening of the calf muscles (gastrocnemius and soleus) which reduces the normal range of dorsiflexion of the foot. Although most commonly acquired by women through constant use of high heeled shoes, it is sometimes congenital or may develop during a protracted period of illness in bed, unless care is observed toward its prevention. In the cases caused by the use of high heels, symptoms of foot trouble usually follow an abrupt change to very low or flat heels, the feet are strained and forced into pronation by the crushing leverage of the legs on the arch under the momentum of locomotion. The mechanism of disorder differs from that of a hypermobile first metatarsal segment in that the concentration of stresses falls directly on the first metatarsal instead of on the second. After any long illness, weakness of the ligaments is an additional factor in this type of foot trouble.

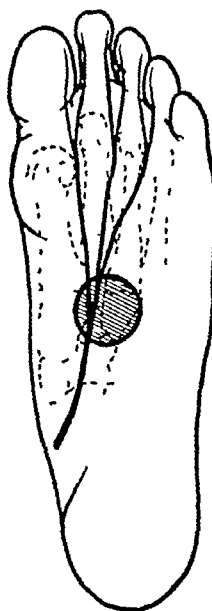


Fig 7—Characteristic point of deep tenderness in the sole indicated by shaded circle. Observe the immediate proximity of the medial plantar nerve and distribution of its branches.

TREATMENT

Ordinary disorders of the foot are not difficult to treat and respond readily to a thoughtful and methodical plan of procedure. The important objective to be borne in mind is first to restore a painless condition and then to establish improved conditions of function. This demands equal attention to three clearly defined sources of pain and disability, namely, (1) superficial irritation, (2) deep trauma and inflammatory changes, and (3) disordered mechanics.

1 Superficial Irritation—The first step in treatment applies to all surface elements of discomfort. Painful calluses, corns, warts or other skin growths should be regarded as foreign bodies. Their immediate removal or treatment is indicated just as positively as a pebble in the shoe or a cinder in a person's eye. Patients will not recognize success in treatment of foot disorders as long as they continue to experience discomfort from these superficial sources. The manner of treating them, whether through the services of a chiropodist or by means of x-rays, radium, electricity or chemical preparations, is best determined by the nature of the growth. After their removal, the area should be protected with adhesive tape or moleskin for a period of a month or six weeks.

It is equally necessary to check immediately on the style and fitting of the shoes, especially the shoes that are worn during working hours. A conservative, conventional model is recommended for which no claims are made other than that it is an article of apparel,

just as a hat or a glove. Proper fitting should provide ample length and toe space. A straight inner border is not desirable if it gives too much room to the great toe and cramps all the smaller ones. The heel fit should be snug, and there should be sufficient metatarsal width both in the upper and in the sole. In women's models it is not uncommon for the sole to be cut so narrow that the head of the fifth metatarsal overhangs the edge instead of being supported on the flat surface of the sole. Also a light metal reinforcement is a desirable feature in the narrow shank of women's shoes. This reinforcement is not an arch support but a useful stabilizing element between the high and narrow heel in back and the front portion of the shoe.

In general, the shoe should be a protective, physiologic foot covering, thoroughly comfortable and reasonably gratifying to the esthetic sense of the patient. Greater liberty may be granted toward shoes used for dress occasions, because then the feet are not usually subjected to the same degree of functional strains. A little discretion in selecting shoes according to occasion will do much to prevent, as well as cure, painful foot trouble in women.

2 Deep Trauma and Inflammatory Changes—One of the most important factors toward successful treatment is a clear realization of the irritated state of the deeper tissues and their need for specific care. Too frequently an immediate cure is expected from the mere application of some mechanical device to the foot or shoe. The presence of subjective symptoms leaves no question as to the traumatized state of the tissues beneath the surface of the foot, and it is equally obvious that function is the traumatizing agent. Sick people are put to bed, strained joints in other parts of the body are immobilized and treated locally, but strained feet are expected to get well while they continue their usual daily labors. Thus it is not always easy to obtain full cooperation of the patient.

Emphasis must be placed on the fact, therefore, that all reasonable restriction of physical activities is imperative during the painful period. In addition, a brief interval of reclining or sitting with the feet elevated to hip height should be arranged for the morning and afternoon, in order to minimize the cumulative irritation of continued function.

Circulatory stimulation is the most effectual means of combating muscular exhaustion, trauma of the tissues and inflammation, and also the various forms of nerve and vasomotor disturbance. Different forms of physical therapy are used for this purpose, but contrast plunges deserve special mention because of their high degree of effectiveness while entailing little or no expense to the patient. They are taken in two buckets with the water of sufficient depth to submerge the feet and legs at least 6 inches above the ankles. The timing is important.

The feet are plunged first into the hot water as hot as can be borne comfortably for one and one-half minutes and then immediately into the cold water for one-half minute. After repeating the process five times, the feet are dried by a brisk rub with a rough towel. This treatment should be followed by a half hour of reclining, during which light exercise of the toes and ankles is recommended in order to maintain the circulatory stimulation. Contrast plunges should be taken once a day and preferably as soon after working hours as possible. In more acute cases, they may be taken twice a day and followed with a local analgesic rub.

Special exercises are useful after subjective symptoms have subsided, before then exercises in which body weight is borne on the feet may do more harm than good. In the present studies not weak muscles but

strained and exhausted muscles are being considered. Therefore rest is more strongly indicated than extra work. Routine exercises may be used advantageously later, especially for their general tonic effect.

The clinical importance of the second phase of treatment cannot be overemphasized. Restricted activity, rest with the feet elevated, and stimulated circulation are essential measures toward overcoming painful symptoms. Naturally they are to be used coincidentally with the third phase of treatment, but with the clear understanding that mechanical devices are primarily protective and aimed at preventing a continuation or recurrence of faulty strains and stresses.

3 Disordered Mechanics—Various types of arch supports, pads, anterior bars, wedges and adhesive strappings have been employed with success for many years. Their use has been described so fully in the literature that present consideration may justifiably be given to two methods of treatment that have resulted from the present investigations. One method is adapted especially for the treatment of foot disorders in adults, while the other is suited more specifically to the "weak foot" condition in children. Both are easy in their application, and their effectiveness has been well demonstrated by several years of experimental use.

It has been shown that disorder in the longitudinal arch and also in the metatarsal portion of the foot originates as a functional deficiency of the first metatarsal, through either laxity of ligaments or shortness, this member lacks the necessary supporting contact with the ground. However, while that contact cannot be gained by the bone, it can be accomplished by raising the supporting surface beneath its head. Thus a proper degree of elevation will take up the slack in lax ligaments and cause the first metatarsal bone to assume its share of function and relieve correspondingly the overload on the second metatarsal (fig 5B), also such effective contact will reestablish the medial margin of structural stability and safeguard the muscles from abnormal strain. When the first metatarsal bone is short, the elevation has the effect of supplementing its length and thereby compensates for this type of fault.

An insole has proved to be the most practical medium for applying this principle. It includes the compensating feature in the form of a small platform, which is located under the head of the first metatarsal. Since the proper height of the platform can be determined only by trial, an insole permits easy removal for any necessary adjustments, while it maintains the platform securely in position when in use. This method makes no attempt to supply an artificial support which acts by assuming the weight stress that should normally be borne by the structure of the foot. It operates by creating a more natural distribution of the stresses to every segment of the foot, just as properly fitted glasses, by compensating for defects in the lens, restore normal vision through corrected distribution of light rays on the retina.

The second method, which is especially useful in children, employs a light piece of flexible metal covered with leather, whose base is located under the heel, and having an extension carried upward on the inner side of the foot to the region of the navicular bone. Body weight imposed on the heel is thus utilized through the extended portion to offer resistance to any tendency of the foot to roll into a pronated posture. As a result, stresses that would otherwise become concentrated on the second metatarsal are distributed on all four of the lateral metatarsals. This device, which may be called an

"arch control," does not establish function in the first metatarsal but protects this medial segment of the foot from the strains and progressive deformity of an unbalanced posture. When used in children, prevention of such strains affords the most favorable chance of a shortening adjustment of the plantar ligaments of this segment during the process of growth, so that effectual ground contact may subsequently develop. Here again there is no element of artificial support, the effort being to minimize abnormal function and to create conditions that are most likely to promote development along normal lines.

Mechanical devices should not be an added cause of pain. Any change in the distribution of weight will be accompanied with a sensation of strangeness, but proper adjustment should eliminate any feeling of actual discomfort from that source. When symptoms persist, it is well to check on the second phase of treatment as carried out by the patient. Too frequently the patient fails to realize its importance and with the first signs of relief subjects his feet to functional tests that interfere with steady improvement.

A snugly fitting, elastic-web band is a helpful accessory in cases in which effusion of the midtarsal joints is present and causes sharp pain along branches of the medial plantar nerve.

CONCLUSION

Instead of presuming all feet to be 100 per cent proficient, various degrees of limited capabilities must be recognized. Such feet are the ones that are predisposed to disorders, they become overstrained and develop subjective symptoms when exposed to the functional stresses that the more perfectly constructed foot can easily withstand.

The identification of primary causes as defects within the foot is most clearly revealed by an analysis of normal function of the foot and its earliest phases of disturbance. They comprise some form of deficiency in the first metatarsal segment, their presence and effects are demonstrable by x-ray examination and by physiologic tests.

Curative treatment as well as preventive care is more effectively based on correcting the original phases of functional disturbance than on the end results, as represented in a broken down mechanism.

Physicians have no reason to doubt their ability to treat the great majority of feet successfully, certainly they are far better qualified to do so than the agencies to which the public now flees. Every urban practitioner can find among his patients many individuals who would be benefited greatly by his help. The mechanics of foot trouble are not difficult to understand, and a few x-ray pictures will go far toward demonstrating that he can analyze these disorders and symptoms with confidence. Treatment then becomes almost an automatic procedure, but it must include systematic attention to each of the three sources of symptoms.

Responsibility for the more difficult and exaggerated cases may well be shared with, or referred to, the orthopedic surgeon. But as in other physical ailments these advanced cases will probably comprise less than 10 per cent of the number that the physician will be able to take care of without aid.

Mothers in particular will be grateful for any help and advice given to them regarding the feet of their children. In the latter, patience is far more necessary than the prescribing of special exercises. This is said advisedly because, in relying on the growth process,

permanent improvement is naturally slow, after suitable means of establishing improved function have been supplied, the general activities of children are usually sufficient for corrective development. On the other hand, disorders in adults may be more stimulating to one's interest because through the alleviation of subjective symptoms the results of treatment are more quickly apparent.

The foot is not an uninteresting organ. It possesses a record of man's prehistory which in completeness and in legibility surpasses that of any other structure in the body. Its modern weaknesses are no less interesting, they are widespread and justly entitled to qualified professional help.

630 West One Hundred and Sixty-Eighth Street

Clinical Notes, Suggestions and New Instruments

INTERRUPTION OF INSULIN SHOCK THERAPY

ROBERT C. HUNT, M.D., AND HAROLD FELDMAN, M.D.
ROCHESTER, N. Y.

One of us recently had the opportunity of studying the technic of the insulin shock treatment of schizophrenia under the guidance of Dr. Manfred Sakel of Vienna. During this teaching demonstration it was observed that there were some patients who frequently failed to arouse from coma after the feeding of sucrose solution by stomach tube. We often waited well over an hour after tube feeding before resorting to intravenous injection of dextrose, which promptly and invariably restored the patients to consciousness. Since starting this form of therapy at the Rochester State Hospital, March 1, 1937, we have had the same difficulty. Four of the first nine patients treated frequently required intravenous injection of dextrose because of failure to arouse after stomach feedings of sucrose solution.

For convenience we have had our feeding solution prepared in 8 ounce (240 cc.) bottles, with concentrations varying according to the size of the dosage of insulin. The general rule has been 1 Gm. of sugar per unit of insulin. Since some of our patients required doses of from 150 to 200 units to produce satisfactory shock, it was necessary to make up sugar solutions of concentrations up to 80 per cent if the feeding was to be restricted to 8 ounces. After the repeated failure of some patients to arouse after these feedings, it occurred to us that this unphysiologic concentration of the solution might be responsible for its lack of absorption. Therefore, April 17 we began supplementing the feeding of sugar solution with about 10 ounces (300 cc.) of warm water. There was an immediate and striking acceleration of reaction from shock in every patient.

Data were analyzed on only the five patients who were fairly well stabilized on a shock dose for several days both before and after the change in technic. Three of these patients were good reactors who usually came out of coma after tube feeding without intravenous injection of dextrose. These three became fully awake from thirty-nine of the forty-one shocks preceding April 17 in an average of thirty-three minutes following tube feeding. Two of them required intravenous injection of dextrose once each, in an average of seventy-five minutes after tube feeding. When the feeding was diluted these three patients aroused from their next nineteen shocks in an average of eighteen minutes after feeding, and no intravenous injections were required.

The other two patients were poor reactors who usually required intravenous injections of dextrose to arouse them. In seventeen shocks preceding the change these two aroused without intravenous injections of dextrose only twice each, in an average of fifty-nine minutes after tube feeding. The other thirteen shocks, 76 per cent of the total, had to be terminated by means of intravenous injection of dextrose, in an average of fifty-three minutes after tube feeding. After the dilution technic was instituted these two aroused from eleven shocks

without intravenous injection of dextrose, in an average of forty-three minutes. They required intravenous injection of dextrose in only three instances, or 21 per cent of the total, and two of these injections were given within half an hour after tube feeding because of alarming physical conditions rather than because of delay in reaction.

We have not as yet used dextrose for the stomach feedings, although it is possible that it might be absorbed more rapidly than sucrose.

CONCLUSION

When one terminates therapeutic insulin shock with tube feedings of sucrose solution, more rapid absorption appears to take place if the solution is well diluted and warmed.

1600 South Avenue

MOLDED PLASTER SHELLS FOR THE REST AND PROTECTION TREATMENT OF INFANTILE PARALYSIS

GEORGE E BENNETT M.D. MILTON C COBEY M.D.
AND HENRY O KENDALL BALTIMORE

During the exhibition of the rest and protection treatment of infantile paralysis at the last session of the American Medical Association, many physicians requested that we report in detail the method of making molded plaster shells and covering them with a water-proof material which increases the life of a cast threefold.

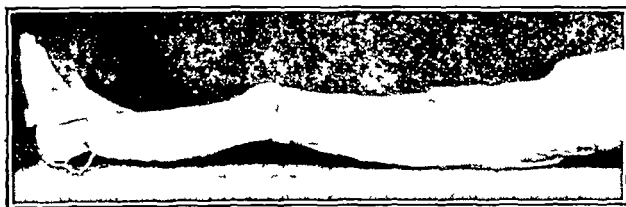


Fig 1—Molded spica cast for the hip with adjustable foot plate

The principle employed by us in the treatment of anterior poliomyelitis is chiefly that of constantly maintaining the physiologic rest position for paralyzed muscles by means of protective supports. As muscle power returns, the weaker of two opposing groups is favored by the protection position, that is, the origin and insertion of the weaker muscles are brought as close as possible without injuring the opposing muscles or producing a permanent deformity by permitting bony or ligamentous changes. At the same time it is desirable that the protected parts may be bathed and given heat and light massage twice or three times a week. The combination of protection and treatment is possible only in a cast which has been bivalved, hence the use of bivalved casts.

The following is a brief description of the technic of applying the molded casts.

The skin is protected from the wet plaster by the use of either thin stockinet or talcum powder. The desired number of splints are held firmly together and thoroughly moistened by drawing them over the surface of the water in a pan. They should not be dropped into the water. A half cast is then made by molding the "specialist plaster splints" (Johnson & Johnson) to the part and holding it in position until it sets. This obviates the necessity of plaster-of-paris bandages. Then, with the plaster still moist, this half cast is removed without the mold being destroyed in any way. The shell is allowed to dry thoroughly with or without the aid of artificial heat. With the use of strips of specialist plaster, the rough edges are then covered and the cast reinforced at the points of greatest strain. To add greater strength to the casts, narrow strips of sheet metal may be molded to the contour of the outer surfaces of the cast and held firmly in place by strips of specialist plaster. When this fresh coat of plaster has been allowed to dry, there may be many rough areas inside and out. The entire cast may be rubbed smooth with a fine grade of sandpaper, obtaining thereby a fairly high polish of the plaster. The cast is now ready to be covered with the highly protective and strengthening coats of cellulose acetate.

The materials¹ used in the cellulose acetate mixture are cellulose acetate (lacquer viscosity 5), dimethyl phthalate A (or "sizing"), and acetone U S P (dimethyl ketone). In preparing the mixture, a 2 quart jar is two-thirds filled with the cellulose acetate flakes. To this is added 3 ounces of the sizing and the jar is then filled with the acetone. The jar is sealed and set aside for three or four hours, and the contents are stirred occasionally. The consistency will be slightly thicker than ordinary paint when it is first made, however, it will be necessary to add more acetone as the mixture is used because the acetone tends to evaporate from the jar as it is opened for use.

With an ordinary paint brush, the cast (which must be thoroughly dry) is painted with the cellulose acetate mixture. Three coats are usually applied, ample time being given—from five to ten minutes—for each coat to dry. Any rough places that appear after drying may be removed with fine sandpaper. It is not advisable to apply the cellulose acetate mixture on days of high atmospheric humidity, as the material will absorb moisture. With the absorption of moisture, the covering turns white and peels off because it does not adhere to the plaster.

The cast is fitted on the patient. It should fit snugly, giving equal pressure over the entire surface of the skin to avoid the occurrence of pressure ulcers. Straps of webbing and buckles are riveted on to the shell in the desired places and the rivet heads are touched with cellulose acetate to smooth the surface. The cast is now water proof, its strength is doubled and its life is trebled.

For adequate protection of muscles in patients convalescing from poliomyelitis, changes in protective supports are frequently needed to meet changes in muscle balance. Ordinary casts are not adjustable to meet these changes without application of entirely new molds. We have therefore incorporated metal with the plaster to make parts of the casts adjustable and eliminate the necessity of constantly changing the molds. Two of these will be described briefly.

Figure 1 shows a molded spica cast for the hip with an adjustable foot plate. In the preparation of the cast, the plaster mold for the foot is made separately and then connected by a metal strip to the cast for the leg. The metal strip is attached to the plaster molds with rivets before the cellulose acetate is applied. The malleable iron bar allows for adjusting the foot in plantar flexion, dorsiflexion, eversion, inversion or combinations of these positions. Adjusting the foot and ankle positions by bending the metal bar eliminates the possibility of distorting the position of the foot.

With close observation and careful checking of the muscle power, contractures are prevented and the equal return of power

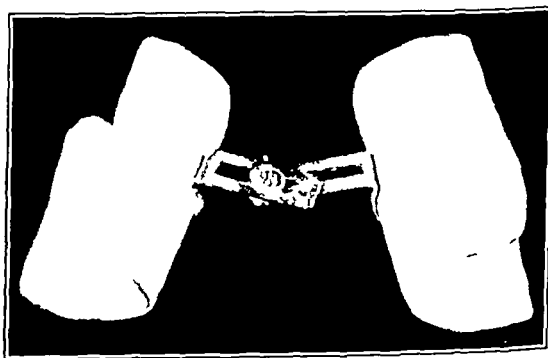


Fig 2—Adjustable molded cast for the thigh

in opposing muscle groups can be brought about at approximately the same time by constantly adjusting the protective support to favor the weaker group.

Figure 2 shows an adjustable molded cast for the thigh, used to protect weak hip abductors or adductors. The sliding metal bars between the leg molds are held in any desired position by

¹ Cellulose acetate (lacquer viscosity 5) Celanese Corporation of America 180 Madison Avenue New York Dimethyl phthalate A Kay Fries 180 Madison Avenue New York Acetone U S P Any large pharmaceutical firm in Baltimore conveniently obtained from Muth Bros & Co 25 South Charles Street

a set screw. This cast may be used advantageously to maintain the frog leg position following reduction of congenitally dislocated hips, facilitating the gradual change from the position of marked abduction to the neutral position.

Protection is important in relation to the small muscles of the hand. To avoid the use of heavy casts, small cuffs have been devised to give maximum protection to isolated muscles with a minimum amount of weight and restriction of motion.

Figure 3 shows a cuff combining the protection for the opponens pollicis and lumbricales. When only the opponens muscles need protection, the lower plaster strip is omitted.

In making the opponens cuff, two strips of 3 or 4 inch special-1st plaster are folded lengthwise to a width of about 1 inch or less. The plaster is always folded before it is wet. Pieces of a tongue depressor split lengthwise are held laterally at the index and little fingers, and the strip of plaster is then wrapped around the hand above the metacarpophalangeal joints. The tongue depressor (or similar object) allows enough width so that the finished cuff will slide easily over the knuckles when the cuff is removed. The plaster band around the hand may be allowed to set before the thumb piece is added. For the thumb two strips of the 3 or 4 inch plaster are folded crosswise and then folded diagonally. This triangular piece is then molded

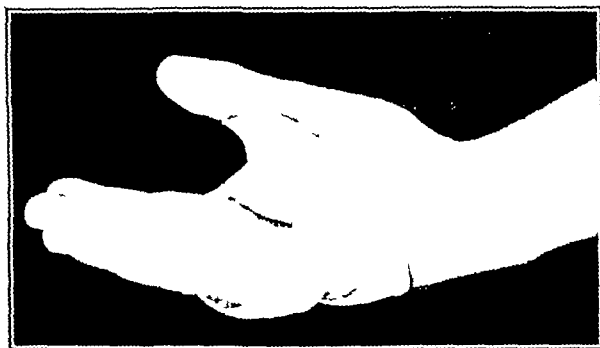


Fig. 3—Opponens lumbricales cuff

as a U under the thumb and held in the desired protection position. The plaster extends only to the distal phalanx (unless the extensor longus pollicis is weak), thus permitting use of the end joint in functional activity. When the lumbricales support is added, the lower band is placed below the metacarpophalangeal joints to prevent any pressure over the knuckles and permit freedom of motion in flexion.

Many other modifications are easily and simply developed. The cuffs are light, thin, water proof and very durable and facilitate the rest and protection treatment of paralyzed muscles.

Greenspring Avenue and Forty-First Street

A SUGGESTED TEST FOR CORTICAL ADRENAL CARCINOMA

ROBERT T. FRANK, M.D., NEW YORK

In the last few years the attention of the profession has been increasingly directed toward the group of patients classified under the terms of "adrenal cortical syndrome," "pituitary basophilic syndrome," and hirsutism complicated by symptoms resembling these groups. The most characteristic symptoms are general hirsutism, plethora, high blood pressure, abdominal obesity, pink or bluish abdominal striae, amenorrhea and enlargement of the clitoris, and osteoporosis.

In 1934 I¹ reported the presence in high concentration of estrogenic substance in the urine of two patients with advanced and disseminated adrenal cortical carcinoma. Both of these cases came to autopsy.² Since then the urines of patients with

various diseases showing some of the symptoms just mentioned have been similarly tested. Fifteen gave a negative reaction. A summary of the conditions is given in table 1. Only two further positive reactions were obtained. These occurred in patients who were found to have adrenal cortical carcinoma. In table 2 are shown the positive reactions so far obtained (in four patients), which include both the previous and the present report. The intensity of the reaction is likewise indicated.

TABLE 1—Negative Reactions

Hirsutes obesity increased blood pressure amenorrhea	♀	6
Hirsutes obesity, increased blood pressure amenorrhea, striae negative intravenous pyelogram osteoporosis	♀	1
Obesity hypertension striae operation and autopsy (normal adrenals)		1
Essential hypertension		2
Child aged 5½ years obesity hypertension 150 mm		1
Hypernephroma (with operation)		1
Adrenal medullary paraganglioma (with operation)		1
Adrenal cortical adenoma (with operation)		1
Adrenal hyperplasia (with operation)	♀	1

As further controls the urines of more than 500 other patients in which the bio assay for estrogenic substance was performed showed no such high concentration. The maximum even in the cases of menorrhagia and metrorrhagia in which our studies³ have shown an excessive ovarian function have not shown a concentration of 1 mouse unit of estrogenic substance in less than 3 cc of urine. Moreover, among the number of adrenal tumors such as adrenal cortical adenoma, adrenal medullary paraganglioma and adrenal hyperplasia, the elevation of estrogenic substance never reached this level.

From these observations it seems likely that adrenal cortical carcinoma alone of adrenal tumors increases the amount of estrogenic substance in the urine to as high as from 1,000 to 10,000 mouse units per liter, with a negative pregnancy test. These observations are therefore again presented as a possible help in diagnosis. The rarity of the condition makes it impossible for any one investigator to obtain a large number of observations.

The performance of the test is extremely simple. A fresh specimen of urine is obtained. Of this a total of 1 and 2 cc is injected subcutaneously in five divided doses spread over forty-eight hours into adult castrated mice (0.2 cc × 5, 0.4 cc × 5). After completion of the injections, the vaginal spreads are examined three times daily for three succeeding

TABLE 2—Positive Reactions

	No. of Cases	Cc of Urine Giving Positive Test
*Adrenal cortical carcinoma (previous report) (autopsies)	2	0.075
†Adrenal cortical carcinoma without symptoms (operation)	1	0.2
‡Adrenal cortical carcinoma (adrenal syndrome) (operation and autopsy)	1	0.1

* Reference 2

† Patient operated on by Dr. Richard Lewisohn; no endocrine symptoms well two years.

‡ Patient operated on by Dr. Edwin Beer; typical adrenal cortical syndrome; early cortical carcinoma breaking through capsule. Died two months after operation. Autopsy.

days. A positive estrogenic reaction manifests itself by the change of the vaginal spreads from leukocytes to cornified epithelial cells. In every case the urine must likewise be tested either by the Friedman or by the Aschheim-Zondek technic. The pregnancy test must be negative if any conclusions are to be drawn.

A positive mouse reaction in quantities of 1 and 2 cc of urine which corresponds to at least 500 to 1,000 mouse units of estrogenic substance per liter, should be considered strong evidence in favor of adrenal carcinoma. If the test is positive in these quantities, it should be performed with smaller quantities until the lowest positive level has been reached.

1035 Park Avenue.

From the Laboratories of the Mount Sinai Hospital.
1. Frank, R. T. A Suggested Test for Functional Cortical Adrenal Tumor. *Proc. Soc. Exper. Biol. & Med.* 31: 1204 (June) 1934.
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3. Oppenheimer, B. S., Globus, J. H., Silver, Solomon, and Shaskau, D. A. Suprarenal Virilism and Cushing's Pituitary Basophilism. *Tr. A. Am. Phys.* 1: 371 1935.

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SUIPESTIFER SEPTICEMIA AND MENINGITIS COMPLI CATING MENINGOCOCCIC SEPTICEMIA AND MENINGOCOCCIC MENINGITIS

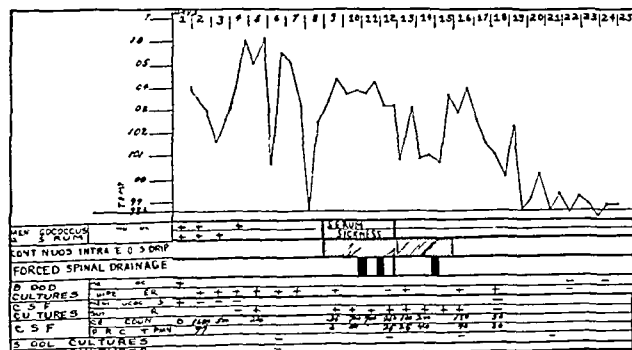
M M RAVITCH M D, AND J A WASHINGTON M D, BALTIMORE

Since 1931 there have been at the Harriet Lane Home twenty-eight cases of infection with the suipestifer bacillus. Almost all the patients were Negro children. Only three deaths occurred. The source of the infection is yet unknown, and it is interesting that several of the patients were nursing infants. Most of the cases (more than three fourths) were instances of primary infection with this organism, while in a few a suipestifer septicemia followed some other infection, most often pneumonia. The commonest picture was that of a paratyphoid-like fever. Complications most commonly seen were pyarthroses and suppurative and nonsuppurative osteomyelitis. Thrombocytopenia and purpura occurred twice. Specific symptoms were absent. Diagnosis was made usually by blood culture. Specific agglutinins for the organism are developed by most patients. The case herewith reported is of particular interest in that it presents a rare manifestation of the suipestifer infection.

REPORT OF CASE

C H, a Negro girl, aged 4 years, was admitted to the Harriet Lane Home Jan 29, 1936, with a meningococcic infection seven hours after the appearance of the first symptom. The previous evening the mother had entered a hospital with proved meningococcic meningitis.

On admission the sensorium was clear, the neck was supple, the Kernig sign was questionable, the reflexes were hyperactive,



Temperature and treatment chart in case reported

and typical fresh petechiae were seen on the arms, trunk and palpebral conjunctivae. The temperature was 105.0 F. Lumbar puncture yielded a clear, Pandy-negative fluid containing only one cell per cubic millimeter. No organisms were seen in the smear. Antimeningococcus serum was given intrathecally. To this can be attributed the subsequent appearance, within a few hours, of cervical rigidity, retraction of the head and a positive Kernig sign. Culture of the cerebrospinal fluid grew meningococci by the succeeding day. The initial blood culture also grew meningococci. Though no history of diarrhea was obtained, the child had two diarrheal stools the first afternoon. The next morning the spinal fluid was cloudy, and although it contained 1,600 cells per cubic millimeter, 97 per cent of which were polymorphonuclears, it proved sterile on culture. A second blood culture, taken that evening, twenty-four hours after admission, instead of the meningococcus, yielded *Salmonella* suipestifer in pure culture. The admission cultures were still on hand and still showed undoubted meningococci. Furthermore, transplants of these original cultures, sent according to the regular practice at the Harriet Lane Home to the National Institute of Health in Washington, D C, were identified as cultures of meningococcus group I. In the following sixteen days, ten of eleven blood cultures taken were positive for suipestifer, one taken in the middle of this period being reported sterile.

On the third day lumbar puncture was attempted on two occasions, each time resulting in the withdrawal of bloody fluid.

From the Harriet Lane Home of the Johns Hopkins Hospital and the Department of Pediatrics, Johns Hopkins University School of Medicine.

Cultures of the fluid were sterile. On the fourth day lumbar puncture again yielded a bloody fluid, which this time contained the suipestifer organism in pure culture. In the next eleven days on each of the nine occasions when culture of the cerebrospinal fluid was made, the suipestifer organism was obtained.

It is interesting that the white blood cell count, 30,500 on admission, had fallen to 4,500 on the sixth day, and the granulocytes had fallen from 93 to 74 per cent. This is in accordance with the observation of mild granulocytopenia as a common event in suipestifer infection.

Antimeningococcus serum was given intrathecally and intramuscularly the first four days. The patient was profoundly prostrated, had a high irregular fever, and was constantly in a most desperate condition. She was given large blood transfusions, repeated lumbar punctures, and finally forced spinal drainage. In brief, she overcame violent serum sickness, thrombophlebitis, pneumonia and myocardial failure with gallop rhythm and recovered. A temporary lumbar subarachnoid block also occurred. The child was discharged, entirely well, forty-eight days after admission to the hospital.

The agglutinations of the blood against *Salmonella* suipestifer group II were as follows: twenty-first day 1:80, thirty-third day 1:320, forty-second day 1:2,560, seventy-fifth day 1:1,280, one hundred and sixty-fifth day 1:1,280. Cultures of stool and urine were negative, as has been the usual experience in the suipestifer infections in the Harriet Lane Home.

COMMENT

In an attempt to probe the literature for other certain cases of suipestifer meningitis we found only three. Kuttner¹ reported fatal meningitis in a white man, uncomplicated so far as was known by other disease. From the spinal fluid *Bacillus* suipestifer was cultured in the Biological Laboratory of the Medical Division of this hospital. Similarly, Materna and Januschke² identified as B suipestifer an organism obtained from blood, organs and cerebrospinal fluid of a man who died of purulent meningitis. Further details are not given by them. Recently Boycott and McNee³ have reported a fatal case of suipestifer infection in an English woman in whom the meningitis was discovered at postmortem examination. Death occurred after a two months illness, marked by chills and fever, bone and joint pains, abdominal rigidity and mental confusion. B suipestifer was cultured from the blood in life, and after death from the blood, spleen and gallbladder as well as from the meninges, which showed a purulent exudate over the vertex.

Although more than eighteen other cases of meningitis due to a gram-negative, motile, bipolar staining rod were found, the reports date from the postwar years and all depend on the identification of Neukirch's⁴ bacillus *Erzindjan* with the Glaser-Voldagsen organism and the acceptance of that organism in turn as a suipestifer strain.⁵

SUMMARY

A 4 year old Negro girl with meningococcic septicemia and meningococcic meningitis had only meningococci in the blood on the first day of disease and *Salmonella* suipestifer alone in the blood on the second day. The latter infection of the blood stream persisted at least fifteen days. Possibly dependent on

1 Kuttner A G and Zepp H D. Paratyphoid like Fever in Child. Due to the *Salmonella* Suipestifer Group. Bull Johns Hopkins Hosp 51: 373 (Dec) 1932.

2 Materna A and Januschke E. Ein Beitrag zu der Frage den ätiologischen Beziehungen zwischen der bazillären Schweinepest und dem Paratyphus B des Menschen. Ztschr f Fleisch u Milchhyg 35: 298 1925.

3 Boycott J and McNee J W. Human Infection with the American Hog Cholera Bacillus. Lancet 2: 741 (Sept 26) 1936.

4 Neukirch P. Ueber Paratyphusbakterien in Blute bei rubralen lichen Erkrankungen in der Türkei. Berlin klin Wchnschr 54: 360 1917. Ueber menschliche Erkrankungen durch Bazillen der Glaser Voldagsengruppe in der Türkei. Ztschr f Hyg u Infektion kr 85: 103 1918.

5 Because of the uncertainty the cases are not cited although the references to them are given. The outcome in these cases was uniformly fatal.

Hesse E. Zur Kenntnis der chirurgischen Komplikationen und Nachkrankheiten des Fleckfiebers, Rückfallfiebers und des Paratyphus. Erzindjan Arch f Klin Chir 128: 739 1924. Die chirurgische Bedeutung des Paratyphus N (Erzindjan)—einer Mischinfektion des Rekurrens aus der Glaser Voldagsen Gruppe. München med Wchnschr 71: 359 1924.

Worona E V. A New Typhoid like Disease and Its Causative Agent. Kubanski Nauchno-Meditsinski Vestnik numbers 58 Sept. Dec 1921 pp 235 246.

gross contamination of the cerebrospinal fluid with blood in the course of lumbar puncture, suppurative meningitis developed and lasted for twelve days. The uniquely benign outcome of the suppurative meningitis can perhaps be attributed to the strong antibacterial meningeal reaction set up by the meningococcal meningitis and intrathecal serum treatment. The low spinal fluid cell count with mononuclear predominance is noteworthy.

Special Clinical Article

CARDIOVASCULAR SYPHILIS

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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Involvement of the cardiovascular system accounts for a large group of persons who suffer the most disabling effects of latent syphilis. Is it any wonder then that particular attention should be directed not only to the control of syphilis but equally to prevention of the devastating effects of cardiovascular disease in persons who have acquired the infection?

Essentially, a consideration of cardiovascular syphilis means a discussion of syphilitic aortitis and its complications, such as aortic insufficiency, aneurysm, narrowing of the ostia of the coronary arteries and, rarely, involvement of the heart muscle. Since all these conditions are latent manifestations of an infection acquired many years previously, naturally they are most frequently unsuspected and are unrecognized before it is too late for treatment to be of curative value.

Spirochaeta pallida, the causative organism, is distributed from the primary lesion through the blood stream to all parts of the body. Infection undoubtedly takes place in the aorta, as well as in other organs of the body, rather early in the disease. When the aorta is so invaded there may develop, rather rarely, an acute inflammatory reaction in the aorta with marked degenerative changes causing death within six or eight months after the primary lesion. One case was observed in our clinic in which a gummatous lesion developed in the cusp of an aortic valve, producing rupture and death within eight months after the initial infection. However, such cases are exceptional, and as a general rule there is a latent period of from ten to twenty years before the infected person manifests any symptoms or signs referable to his cardiovascular system.

FREQUENCY

Syphilitic aortitis, from the standpoint of the pathologist, is a disease recognized far more frequently at autopsy than in the clinic. Its incidence in different parts of the country varies with the character of the population. Since syphilitic infection is far more prevalent in Negroes than in other races and since it occurs more frequently among the ignorant and the indigent, it naturally follows that aortitis is most commonly found in these groups, although the fact that syphilis is no respecter of persons must not be forgotten. From statistical data collected by Turner¹ it would seem that approximately 10 per cent of all

patients with latent syphilis will have demonstrable clinical evidence of cardiovascular involvement. In a series of 6,253 cases of syphilis in a late stage collected by the Cooperative Clinical Group,² approximately 619, or 10 per cent, of the patients had cardiovascular syphilis on admission or acquired it later. The wonder is that a far greater number did not give clinical manifestations. Warthin³ and his associates have observed at autopsy that the aorta is involved, either macroscopically or microscopically, in approximately 90 per cent of persons with latent syphilis. The age group most frequently affected is that between the ages of 30 and 55 years, although cases may occur earlier and some even later. However, it should constantly be remembered that every person who has syphilis is an excellent candidate for cardiovascular involvement.

PATHOLOGY

Pathologically, aortitis is recognized as the late lesion which produces disability. The aorta is invaded by means of the lymphatics accompanying the vasa vasorum, the process begins in the adventitia and is followed later by degenerative changes occurring in the media. Since the ascending aorta and the aortic arch are most bountifully supplied with lymphatics, it is natural that these areas should be the ones most frequently involved. The degenerative process usually begins just above the aortic valves and extends either upward or downward. As the infection progresses, there is marked destruction of the elastic and connective tissues composing the media, resulting in focal degenerative areas which may remain small or may be fairly extensive. Along with this change there is reparative fibrosis, resulting in marked scarring and producing considerable deformity of the aorta. As the lesion progresses the intima becomes thickened by a proliferation of connective tissue, so that the inner surface of the aorta is thrown into ridges, which extend up and down its long axis, and resembles very much the bark of a tree. With long standing infection marked scarring occurs, together with a weakening of the aortic wall. Occasionally one sees atheromatous changes associated with it. As a result of the progression of this pathologic process, several complications may develop which add to its seriousness.

Syphilitic aortic insufficiency results when there is a downward extension of the aortitis involving the commissures of the semilunar valves. The commissures are widened, causing a separation of the valves and resulting in insufficiency. Sometimes this lesion is the only visible one of syphilitic involvement. Occasionally a small gumma involving the leaflet of the valve will occur. Frequently the syphilitic process may extend into the valve itself, producing insufficiency.

Syphilitic aortitis may cause extensive narrowing of the orifices of the coronary arteries, at times almost obliterating them. I have frequently observed both coronary ostia to be so small that they would admit only a bristle, sometimes one orifice is involved without the other. As a result of the partial or complete occlusion of the coronary ostia, patients frequently have attacks of angina pectoris, suffer paroxysmal dyspnea or even die suddenly.

Aneurysm results when the medial coat of the aorta becomes so completely destroyed as to withstand no longer the intra-aortic pressure. The involved aortic

Read in the General Scientific Meetings at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1937.

¹ Turner, T. B. The Race and Sex Distribution of the Lesions of Syphilis in 10,000 Cases. *Bull. Johns Hopkins Hosp.* 46: 159 (Feb.) 1930.

² Cole, Harold N., and Usilton, Lida J. Cooperative Clinical Studies in the Treatment of Syphilis. *Cardiovascular Syphilis Arch. Int. Med.* 57: 893, 910 and 919 (May) 1936.

³ Warthin, A. S. The Lesions of Latent Syphilis. *South. M. J.* 24: 273 (April) 1931.

wall begins to give or stretch. If the syphilitic process is diffuse, general aortic dilatation results and a fusiform aneurysm is formed, but if the medial degeneration is localized over a smaller area, a saccular aneurysm results. Saccular aneurysms vary in size from those of only a few centimeters in diameter to those that almost completely fill the upper part of the chest. The coronary arteries may be involved after leaving the aorta, although such involvement is rare according to my experience.

Involvement of the myocardium does not appear with anything like the frequency of aortic involvement. Three types of lesions in the myocardium are distinguished. First, a localized gumma may occur in any part of the heart. It is seldom recognized and rarely gives any symptoms of its presence unless it occurs in an area involving the conducting system. In such a location it will cause varying degrees of heart block. Second, a diffuse generalized acute inflammatory condition may be observed. It was described first by Warthin⁴ and later by me.⁵ It is characterized by numerous well defined translucent areas scattered throughout the myocardium, chiefly in the ventricles. The heart muscle in the involved areas is completely destroyed, and patients with this type of syphilitic infection usually die suddenly. Third, the type of lesion which occurs most frequently in younger persons is the fibrotic type, in which the heart muscle, in the absence of gross coronary obstruction, is replaced in part by an overgrowth of connective tissue, evidently an attempt at healing. The integrity of the heart muscle is so completely destroyed that it is no longer able to act efficiently. The ventricles dilate slowly but gradually, compensation is lost, the heart is never able to become again a perfectly functioning organ and the patient dies of progressive cardiac insufficiency.

RECOGNITION OF CARDIOVASCULAR SYPHILIS

Every person who has had syphilis, whether treated adequately, indifferently or not at all, should be suspected of having involvement of the cardiovascular system. Of those who have had no treatment or of those who have had inadequate treatment, approximately 25 per cent will show a variable degree of aortitis. In those who were seen early and who have been treated adequately, the aortic involvement occurs very, very rarely.

In the detection of syphilitic aortitis, too much reliance must not be placed on the presence of a positive Wassermann reaction or on any other serologic test for syphilis. It is well known that from 10 to 20 per cent of persons with latent cardiovascular syphilis will give a negative serologic reaction. It is of the utmost importance to be able to recognize aortitis before the development of its complications. Admittedly this is extremely difficult to do, yet it can be done with a fair degree of accuracy provided the physician will first suspect the existence of the disease and then take a sufficient amount of time to investigate each patient thoroughly. A good general rule to follow is first to suspect its presence and then to prove that it does not exist before dismissing the diagnosis. Of great help in making the diagnosis is the history given by the patient. In the early stage of the disease there is usually no complaint, although, when the patient is closely questioned, mention is made of oppression in the chest, usually referred

beneath the upper part of the sternum, noticed most frequently after exercise or any excitement and lasting only a short time. This type of pain does not radiate and frequently is accompanied by a slight hacking cough or a desire to take a deep breath. When there is marked thickening about the ostia of the coronary arteries, more severe and radiating pain occurs, that typical of angina pectoris. In the absence of pain, a history may be obtained of decreasing ability to take exercise without becoming short winded or of attacks of paroxysmal dyspnea, coming mostly at night during sleep.

Physical examination may reveal surprisingly little but one may find a slight increase in the retromammary area of dullness and occasionally a loud metallic tambour-like aortic closure. Fluoroscopic examination of the chest may show nothing, or it may show slight dilatation of either the ascending aorta or the aortic arch. A patient who has not had rheumatic heart disease and does not have hypertension, but who does give a history of syphilitic infection and presents any three of the aforementioned symptoms or signs, even in the absence of a positive Wassermann reaction, should receive the benefits of antisyphilitic treatment.

TREATMENT

If every person who acquires syphilis could receive the benefits of adequate treatment, such as has been outlined by the Cooperative Clinical Group,⁶ there would be few patients with cardiovascular manifestations of latent syphilis. Moore⁷ said "In a large series of patients admitted with primary and secondary syphilis and followed for a considerable number of years thereafter, none who have received as much as three courses of arsphenamine plus interim heavy metals subsequently developed clinically recognizable cardiovascular syphilis." The best treatment then is to prevent the development. Until such prevention, which I hope is not far distant, is accomplished, it is necessary to consider what line of procedure will be most beneficial for the patient with this type of latent syphilis.

Until a few years ago it was a controversial question whether patients with aortitis, aortic insufficiency or aneurysm should receive antisyphilitic treatment at all. Such a point of view arose in the minds of practitioners when they observed that this type of patient frequently became progressively worse when treated vigorously with arsenicals. Many physicians can remember distressing results that followed the administration of arsenicals to patients with aortic insufficiency or with aneurysm. Sudden death was not unusual, rapid progress of the disabling condition was frequently observed and a good many patients without treatment lived longer than those with specific treatment. Since then better methods have been outlined which promise more to the patient in the relief of symptoms, the prolongation of life and the prevention of complications, than was possible ten years ago.

A patient with cardiovascular syphilis should be subjected to the usual forms of treatment that are prescribed for any patient with heart disease, that is, his habits and mode of living should receive attention, the amount and character of exercise should be discussed and other general hygienic measures should be taken for his comfort. As to specific treatment, patients may be divided into two groups, those who have a normally

⁴ Warthin A. S. Sudden Death Due to Exacerbation of Latent Syphilitic Myocarditis. *Am Heart J* 1: 1 (Oct.) 1925.
⁵ Paullin J. E. Syphilitic Myocarditis. *South M J* 23: 988 (Nov.) 1930.

⁶ Stokes J. H., Cole H. N., Moore J. E. and Others. Standard Treatment Procedure in Early Syphilis. *J. A. M. A.* 102: 1267 (April 21), 1934.

⁷ Moore J. E. The Modern Treatment of Syphilis. Springfield Ill., Charles C. Thomas, 1933.

functioning myocardium and those who have congestive heart failure. In the latter group the congestive failure must receive immediate attention, and the remedies employed in treating patients who have this condition as the result of any other cause are freely utilized. When the pathologic process has advanced so far as to cause congestive failure, the patient will profit less from anti-syphilitic treatment.

In planning any form of treatment for the patient with cardiovascular syphilis, it is of the utmost importance to be sure that the measures employed will do no harm. In the wards of the Emory University Division of Grady Hospital and in the outpatient department under the supervision of Dr. L. M. Blackford, one sees many patients with aortic insufficiency and aneurysm who have never had any antisyphilitic treatment, a few who have had indifferent treatment and none who have had adequate treatment. Many of these patients are critically ill when first seen. As a result of this experience over a number of years, these patients are treated from four to six months with potassium iodide by mouth and intramuscular injections, at weekly intervals, of either a mercury or a bismuth compound. Arsphenamine is not given in any form whatsoever until the patient has had the preliminary treatment. At the end of this period, according to the nature of the lesion and the condition of the patient, one may begin the administration of small doses of neoarsphenamine, starting with 0.1 Gm and never exceeding 0.3 Gm. In cases of uncomplicated aortitis, larger doses of neoarsphenamine may be given during the second period of intravenous medication, provided there is no evidence of involvement of the coronary ostia. To obtain the most satisfactory results, every patient with cardiovascular syphilis should receive continuous weekly treatments for at least eighteen months.

If the patient when first seen has cardiovascular syphilis and congestive heart failure, antisyphilitic treatment must be undertaken with the greatest care. Potassium iodide is given by mouth as soon as possible, and smaller doses of the heavy metals at weekly intervals. In the Grady Hospital clinic, because of the type of patients who have the disease and their general inherent characteristics, it is impossible to give accurate statistical data on the end results of this type of therapy. However, statistical data collected by the Cooperative Clinical Group^a in a large series of cases of uncomplicated syphilitic aortitis show that the average duration of life for untreated patients was thirty-four months, for those adequately treated eighty-five months and for those inadequately treated fifty-six months. Of those adequately treated, 63 per cent were living and symptom free. The life of patients with aortic insufficiency who received adequate treatment was prolonged from forty to fifty-five months, for patients with aneurysm who received adequate treatment, the average duration of life was increased from thirty-seven to seventy-five months.

My experience leads me to believe that as a result of treatment many patients are made symptom free and live longer than they otherwise would.

SUMMARY

1 Involvement of the cardiovascular system occurs in approximately 10 per cent of patients with latent syphilis.

2 Beginning as aortitis, it may lead to aortic insufficiency, aneurysm, narrowing or occlusion of the coronary ostia or myocarditis.

3 Adequate treatment of early syphilis will prevent cardiovascular involvement in practically all patients.

4 The early recognition of aortitis before complications occur and the institution of adequate treatment prolong life and relieve symptoms.

5 Patients with cardiovascular syphilis should receive for the first four to six months potassium iodide by mouth and intramuscular injections of either a mercury or a bismuth compound, at the end of this period small doses of neoarsphenamine may be given.

6 Treatment should be continued at weekly intervals for at least eighteen months to accomplish the best results.

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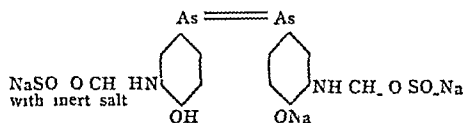
Council on Pharmacy and Chemistry

PRELIMINARY REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
PRELIMINARY REPORT
PAUL NICHOLAS LEECH, Secretary

TRISODARSEN (FORMERLY TRIARSEN)

Under the name "Triarsen," the Abbott Laboratories presented for the Council's consideration a brand of Trisodium Arsphenamine Sulfonate, with the following probable formula:



The firm stated that the product was not being marketed but was being supplied to investigators as "Preparation #1529." Subsequently, at the suggestion of the Council, the firm adopted the name "Trisodarsen" for the product, which is not being actively marketed but is supplied to investigators.

Trisodarsen is proposed for use in the treatment of syphilis in the same manner as neoarsphenamine. It is stated to be considerably more stable in air than neoarsphenamine and sulfarsphenamine. The maximum tolerated dose, administered intravenously, for rats is reported to be between 500 and 600 mg per kilogram of body weight. The maximum tolerated dose for neoarsphenamine is between 240 and 400 mg per kilogram.

TABLE 1—Average Time and Treatment Necessary
for Reversal of Blood Wassermann
Reaction to Negative

	Cases	Average Total Dosage Grams	Average No of Injections	Average No of Days
Arsphenamine	103	3.9	9.7	75
Neoarsphenamine	110	7.1	13.4	99
#1529	40	4.18	8.0	58.7

It appears that single doses of 25 mg of Trisodarsen per kilogram cure experimental rabbit syphilis. The firm states that the average dose for man is from 0.45 to 0.6 Gm, for women, from 0.3 to 0.5 and 0.6 Gm is recommended, administered intravenously.

The firm informed the Council that Dr. John H. Stokes and Herman Beerman had been working on the product about three and three-fourths years. The total number of cases treated was 165 and the number of injections given 2,675, the total number of injections per patient was from one to fifty-five. Eighty-two per cent of forty cases with blood serologic reversal to negative were reported to be reversed by the tenth injection of the drug.

With seropositive primaries, the time in days for reversal to negative was reported as somewhat longer than with arsphenamine and shorter than with neoarsphenamine. With cases of secondary syphilis the time for reversal to negative was shorter

than with arsphenamine and much shorter than with neoarsphenamine. In both groups the number of cases studied was comparatively small.

The firm presented Moore's condensation of the figures of Cannon and Karelitz as in table 1, adding data on preparation #1529.

For healing of lesions of early syphilis, the firm presented Moore's condensation of the earlier data of Cannon and to it added for comparison preparation #1529 (table 2).

TABLE 2—Average Time and Treatment Necessary for Disappearance of Visible Lesions

Cases	Average Total Dosage Grams	Average No of Injections	Average No of Days
Arsphenamine (32)	1.3	2.7	14
Neoarsphenamine (61)	3.8	5.8	23
#1529 alone (53)	1.35	2.7	14.6
#1529 and bismuth (62)	1.05	2.66	15.0

Disappearance of Spirochetes—According to data presented by the firm the organisms in primary lesions with 0.3 Gm of Trisodarsen disappear in from twenty-four to ninety-six hours and with 0.6 Gm in from twenty-four to thirty-six hours. With secondary syphilis, using 0.3 Gm, in more than forty-eight to seventy-two hours, and using 0.6 Gm, more than forty-eight hours and less than ninety hours.

Reactions—A drug may be able to satisfy all the requirements of potency and yet not be free from reactions. According to information supplied by the firm there seemed to be no particular effect from Trisodarsen on the kidneys or blood in the patients studied. However, seventy-five of the 165 patients treated had one or more reactions. Nausea and vomiting was seen in thirty-three cases and was so severe that it was necessary to stop the drug in twelve cases, 8 per cent of the whole. Moreover, nitritoid reactions were observed in thirteen cases, 8 per cent of the whole. There was also one mild case of dermatitis, one moderate case and two severe cases of dermatitis were observed. Various other reactions in smaller numbers were observed. Cole and his workers in 1931 found that, in 1,212 cases with 78,350 injections, reactions were observed with 15 per cent of patients treated with arsphenamine and 16.7 per cent treated with neoarsphenamine. With #1529 this rose to 45.5 per cent. Cutaneous reactions with #1529 were one in 1,338 injections, as against Moore's finding of dermatitis—one in 1,857 with arsphenamine and one in 5,367 with neoarsphenamine. The firm states that recent lots of the drug show lessened incidence of reactions.

Chemotherapeutic Consideration—In rabbit syphilis Trisodarsen in a dosage of 0.025 Gm per kilogram gave 100 per cent cures. The firm stated that the maximum tolerated dose for rats lies between 500 and 600 mg. Trisodium arsphenamine sulfonate is less toxic than neoarsphenamine. This is referred to later.

The Abbott Laboratories apparently present sufficient experimental evidence on arsenicals to give an idea of the value of Trisodarsen for syphilis in rabbits. The firm states that it is apparently less toxic than neoarsphenamine. Unfortunately, animal experiments cannot always be transferred to man and this seems to be particularly true with preparation #1529. Probably the prime requisite of any antisyphilitic agent is first its freedom from reactions. With #1529 the investigators themselves state that they are three times as frequent as those observed after arsphenamine and neoarsphenamine. Moreover, while the drug has been studied by two expert syphilologists, Stokes and Beerman, the material thus far (at the date of the referee's first report to the Council) comprises but 165 cases and 2,675 injections.

There is no question that the development of more antisyphilitic agents is desirable. They must be, however, both potent and safe. If they are no more potent than agents now available, certainly much will depend on their relative safety.

As a result of its first consideration, the Council felt that by all of these criteria Trisodarsen, though promising, is not yet ready for general use. The Abbott Laboratories was informed of the Council's belief that a preliminary report dealing with such an apparently toxic product would be unwise. The firm was further informed that, as long as marketing of the product

was held in abeyance, any report by the Council would also be held in abeyance, pending further investigation specially along the lines of the toxicity of the product.

Subsequently the firm submitted a later paper by Drs Stokes and Beerman, reviewing a total of 189 cases treated with 3,009 injections. This was transmitted to the Council for its consideration only in part, the report in its entirety having been submitted to the *Archives of Dermatology and Syphilology* for publication. The firm submitted this material in the hope that the additional data would justify a preliminary report by the Council.

The Council's referee examined this portion of the report by Drs Stokes and Beerman on the drug Trisodarsen, which has been investigated by a single observer on a fellowship grant for four years. He found that the drug apparently has an animal chemotherapeutic index of 18 and, as used on 189 patients with 3,009 injections, seemed to give as satisfactory results from the standpoint of its spirillicide effect as other arsenicals.

The reaction incidence of the drug, as shown by these further clinical investigations in comparison with other arsenicals, indicates that it produces as little reaction of the immediate or mild type as arsphenamine, neoarsphenamine and mapharsen. It is perhaps somewhat more reaction producing than neoarsphenamine when the latter is used under the best technical administration. It is suggested that, like sulfarsphenamine, Trisodarsen may produce more dermatitis than neoarsphenamine. This requires suspended judgment.

Herxheimer effects are apparently rare. No injuries to special sense organs have been noted. In rate of healing of primary and secondary lesions, Trisodarsen compares favorably with other arsenical preparations and seems to have a favorable effect on the blood serologic tests in early syphilis. Moreover, the incidence of relapse of a clinical and serologic type is low and would compare well with figures for continuous treatment with other preparations.

Investigators admit that clinical examination of Trisodarsen is incomplete, as its use has been confined for the present to early syphilis, and no report has been attempted on latent cardiovascular, prenatal and neurosyphilis.

In view of the further clinical studies, the Council voted to postpone further consideration of Trisodarsen to await the availability of more corroborative evidence and authorized publication of the foregoing preliminary report.

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH Secretary

VIOSTEROL (A R P I PROCESS) IN OIL

Under the name Viosterol (A R P I Process) in Oil, American Research Products, Inc., a branch of General Mills, Inc., markets a solution in oil of ergosterol activated by the action of low speed electrons produced by suitable controlled electrical means. The finished product is adjusted to contain not less than 10,000 U S P units of vitamin D per gram. The firm presented satisfactory evidence of the clinical efficacy of the product. In addition the firm presented reports of comparative animal feeding tests of massive doses of vitamin D which show no differences in toxicity between preparations containing crystalline vitamin D, Viosterol (A R P I Process) and Viosterol produced by the Steenbock process. While these results do not prove that vitamin D is the same chemical substance in the three products, taken together with the clinical evidence already presented the results indicate that the antirachitic effect of Viosterol (A R P I Process) in Oil in therapeutic doses is the same as that of ergosterol otherwise activated in oil. The firm has signified its intention of carrying out further chemical investigations of the product, which will be considered by the Council.

The Council has recently revised its definition of viosterol to include products activated by other than ultraviolet irradiation. This therefore makes Viosterol (A R P I Process) in Oil eligible for acceptance. The firm, however, does not market the product as such to physicians but sells the prepara-

tion to concerns for incorporation in other products. Other firms have now submitted products containing Viosterol (A R P I Process) in Oil for the Council's consideration.

The Council recognizes Viosterol (A R P I Process) in Oil acceptable as an ingredient of otherwise acceptable marketed products in which it is incorporated for its antirachitic effect.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED

FRANKLIN C BING Secretary

SQUIBB YEAST TABLETS

(DRIED BREWERS' YEAST AND MALTED WHEAT GERM EXTRACT)

Manufacturer—E R Squibb & Sons, New Brunswick, N J

Description—Dried brewers' yeast and malted wheat germ extract (essentially maltose, dextrines and "starch intermediate products") in tablet form

Manufacture—A strain of brewers' yeast high in vitamins B and G is grown on specially prepared hop free wort containing sugars, grain extractives and nutrient salts, centrifuged, washed several times and spray dried. The resulting powder is mixed with malted wheat germ extract (Squibb Vitavose, THE JOURNAL, Aug 6, 1932, p 477) and compressed into tablets.

Analysis (submitted by manufacturer)—Moisture 4.0%, ash 6.5%, protein ($N \times 6.25$) 42.0%, fat (ether extract) 1.4%, crude fiber 0.0%, carbohydrates (by difference) 46.1%

Calories—37 per gram, 105 per ounce

Vitamins—Biologic assay shows a potency of 50 International units of vitamin B₁ and 20 Sherman units of vitamin G per gram

CHALLENGER BRAND EVAPORATED MILK

Distributor—Sewell's United Stores, Salt Lake City

Packer—Page Milk Company, Merrill, Wis

Description—Unsweetened, sterilized evaporated milk, the same as Page Evaporated Milk (THE JOURNAL, May 30, 1931, p 1872)

BLAIR'S BEST FLOUR PHOSPHATE ADDED

Manufacturer—Blair Milling Company, Atchison, Kan

Description—Bleached red winter wheat containing 0.5 per cent monocalcium phosphate

Manufacture—Selected red winter wheat is cleaned, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one ninth ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (1 pound to 50 barrels of flour)

Analysis (submitted by manufacturer)—Moisture 13.0%, total solids 87.0%, total ash 0.9%, fat (ether extract) 1.0%, protein ($N \times 5.7$) 9.3%, monocalcium phosphate 0.5%, crude fiber 0.2%, carbohydrates other than crude fiber (by difference) 76.1%

Calories—35 per gram, 99 per ounce

OLAC

Manufacturer—Mead Johnson and Company, Evansville, Ind

Description—A spray-dried, pasteurized, homogenized mixture of skim milk, Dextrin-Maltose, olive oil, calcium caseinate, and halibut liver oil

Manufacture—Skim milk from tuberculin tested cows is mixed in formula proportions with Dextrin-Maltose and calcium caseinate. The mixture is pasteurized, cooled, mixed with formula proportions of olive and halibut liver oils, homogenized

under 2,500 pounds pressure, spray dried, and packed in sterilized cans hermetically sealed under nitrogen

Analysis (submitted by manufacturer)—Moisture 1.0%, total solids 99.0%, ash 3.5%, fat (ether extract) 18.6%, protein ($N \times 6.38$) 23.5%, crude fiber 0.0%, carbohydrates other than crude fiber (by difference) 53.4%

Calories—48 per gram, 136 per ounce

Vitamins—The vitamin A content of Olac (furnished by halibut liver oil) is approximately 1,400 U S P units per ounce powder. Other vitamins are present as they occur in skim milk powder

Claims of Manufacturer—A proprietary food designed for the feeding of premature and new-born infants, particularly those deprived of breast milk, under the direction of a physician

(1) ANN PAGE SPARKLE VANILLA ICE CREAM DESSERT POWDER

(2) ANN PAGE SPARKLE CHOCOLATE FLAVORED ICE CREAM DESSERT POWDER

(3) ANN PAGE SPARKLE CHOCOLATE FLAVORED PUDDING

(4) ANN PAGE SPARKLE VANILLA PUDDING

Packer—Quaker Maid Company, Inc, New York

Distributor—The Great Atlantic and Pacific Tea Company, New York

Description—(1) A powdered mixture containing sugar, skimmed milk powder, vanilla extract, Karaya gum, certified color and salt

(2) A powdered mixture containing sugar, cocoa, Karaya gum and salt

(3) A powdered mixture containing sugar, corn starch, cocoa, powdered skim milk, salt and vanilla

(4) A powdered mixture containing cane and corn sugars, corn and arrowroot starches, vanilla extract, salt and certified color

Manufacture—The dried or granulated ingredients are mixed and mechanically filled into moisture-proof parchment paper bags, which, in turn, are inserted into tightly sealed cartons wrapped in cellophane

Analyses (submitted by manufacturer) —

	(1) per cent	(2) per cent	(3) per cent	(4) per cent
Moisture	0.4	1.1	3.1	3.1
Total solids	99.6	98.9	96.9	96.9
Ash	1.4	1.3	1.7	1.2
Salt (NaCl)	0.6	0.7	0.7	1.0
Fat (ether extract)	0.2	2.3	2.4	
Protein ($N \times 6.25$)	3.4	5.4	2.7	
	(N $\times 6.38$)			
Reducing sugar as dextrose				21.2
Reducing sugar as lactose	4.6			
Total invert sugar	98.1	79.6	56.0	73.4
Sucrose (calculated)	89.0	75.6	53.2	49.5
Crude fiber		1.0	0.7	
Starch (acid conversion)		4.0	26.6	
Carbohydrates other than crude fiber (by difference)	94.6	88.9	89.4	95.7

Calories—(1) 3.94 per gram, 112 per ounce

(2) 3.98 per gram, 113 per ounce

(3) 3.90 per gram, 111 per ounce

(4) 3.83 per gram, 109 per ounce

1 BOSWELL'S BEST BRAND HAWAIIAN PINEAPPLE SLICED

2 BOSWELL'S BEST BRAND PINEAPPLE JUICE

Distributor—Boswell Grocery Company, Kilgore, Texas

Packer—Hawanan Pineapple Company, Ltd, San Francisco

Description—1 Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole Hawaiian canned pineapple products (THE JOURNAL, April 8, 1933, p 1106)

2 Canned Hawaiian pineapple juice retaining in high degree the vitamin content, the same as Dole Hawaiian Finest Quality Pineapple Juice (Unsweetened) (THE JOURNAL, June 3, 1933, p 1769)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 2, 1937

SULFANILAMIDE—A WARNING

Seldom has any new drug introduced in medical practice aroused the enthusiasm that has developed for sulfanilamide. Much of this enthusiasm is warranted. The drug is truly remarkable, as indicated by startling results reported in the treatment of various infections. Indeed, its coming has stimulated research in pharmacology and biochemistry to a remarkable degree. Moreover, as is customary, departments of research associated with the manufacture of pharmaceutical products have already taken to the long trail of studying similar and associated preparations and derivatives to find something better or just as good which they can call all their own. When these derivatives appear for sale, the optimistic advertising departments will extol them as far superior to sulfanilamide itself. The therapeutic or toxic properties of new drugs cannot be predicted from their chemical formulas. Experience indicates that many of the new drugs will be without therapeutic advantage over the nonproprietary sulfanilamide, some may enhance such undesirable side reactions as granulocytopenia or severe damage to the erythrocytes. In Europe, similar research is being done on nitroso compounds and various derivatives. Out of the mass of developed preparations may come some drugs of merit. Until plenty of evidence is available, however, as to the virtues and dangers of such products, the medical profession may well be skeptical. Many months of investigations of the pharmacology, toxicology, and clinical application of new preparations under carefully controlled conditions are needed to provide evidence of therapeutic value. Some of these new compounds may have a higher chemotherapeutic index than does sulfanilamide as far as mice, for instance, are concerned. Care must be taken, nevertheless, in applying to man toxicity figures based wholly on animal experiments.

THE JOURNAL, the Council on Pharmacy and Chemistry and various individual practitioners have warned against indiscriminate use of sulfanilamide. Apparently these warnings have been insufficient. In THE JOURNAL, September 25, eleven contributions on

sulfanilamide were published. Nine of these reported the occurrence of toxic manifestations, including dermatitis and photosensitization of the skin. Particularly serious are the possible dangers of granulocytopenia and sulfhemoglobinemia. The latter may sometimes go unrecognized without adequate methods of diagnosis. The complication originally called enterogenous cyanosis, thought to be due to "intestinal toxemia," has been shown to be due to the presence of sulfhemoglobin or methemoglobin in the blood.

Sulfanilamide should not be administered in association with other drugs until definite information is available as to toxic effects. Thus far only the harmlessness of sodium bicarbonate in such association seems to have been established. Magnesium sulfate and some of the coal tar derivatives are conspicuously drugs which should not be administered concurrently.

Premature publicity for this drug has, as usual, been unfortunate. The startling news reports that the administration of sulfanilamide will "cure" gonorrhea in forty-eight hours has led to some unpleasant results. Responsibility lies considerably with pharmacists who are willing to sell dangerous drugs to anybody over the counter.¹ In one large city, hospitals have admitted young men with severe sulfhemoglobinemia resulting from self medication with sulfanilamide. The physician must bear in mind the potential hazards of this drug.

SPIROCHETAL JAUNDICE

The probability that spirochetal jaundice, or Weil's disease, will become a disease of importance in this country has already been pointed out.¹ Ample evidence of the widespread geographic distribution and actual hazard from the disease has appeared in many different journals. Three cases of Weil's disease were reported in 1937 for the first time in Canton, China. Zuelzer² reviewed fourteen cases of the disease occurring in 1934 in Denmark. In thirteen of these there was definite icterus but, as she pointed out, only about 40 to 60 per cent of all patients with Weil's disease have recognizable icterus. From Japan, Germany, Austria, South America, France and Soviet Russia⁴ cases of the disease have also been reported. Davidson and his colleagues⁵ reported nineteen cases

¹ Sulfanilamide has been sold under a number of brand names. The physician realizes that products marketed under brand names are exactly as dangerous as those sold as sulfanilamide. Occasionally Prontosil is mentioned as a proprietary brand of sulfanilamide. Prontosil is not sulfanilamide but is a derivative of sulfanilamide which apparently breaks down in the body to sulfanilamide.

² Spirochetal Jaundice in Sewer Workers editorial J. A. M. A. 103:493 (Aug. 18) 1934.

³ Tang T. K. The Occurrence of Weil's Disease in Canton, China. Chinese M. J. 51:483 (April) 1937.

⁴ Zuelzer, Margarete. Biologie und Epidemiologie der Weilschen Krankheit mit besonderer Berücksichtigung von Danemark. Acta path et microbiol. Scandinav. 12:511 1935.

⁵ Pub. Off. Internat. d'Hyg. 26:1747 (Oct.) 1934. 27:678 (April) 1935. Compt. rend. Soc. de biol. 117:451 1934. Med. Klin. 33:53 (Jan. 8) 1937. Klin. Wchnschr. 14:1147 (Aug. 10) 1935.

⁶ Davidson L. S. P., Campbell R. M., Rae, H. J. and Smith J. Weil's Disease (Leptospirosis). Brit. M. J. 2:1137 (Dec. 22) 1934. Davidson L. S. P. and Smith J. Weil's Disease in Fish Workers. Quart. J. Med. 5:263 (April) 1936.

of spirochetal jaundice in fish workers in Aberdeen. Thirteen of these patients were employed definitely in the handling and cleaning of fish. These observations show that workers among fish must be included among the occupational groups especially liable to Weil's disease. Wolstencroft⁶ reported a case in a canal worker in England, so that this work also must be considered hazardous in this respect. Another unsuspected source of leptospiral infection was reported in the Northumberland and Durham coal mines by Swan and McKeon.⁷ In that report, twelve cases of the disease were found among miners, with a mortality of 33 per cent. There was a history of working in damp, rat-infested seams in all except one case. According to Alston and Brown,⁸ in a paper read February 26, 1937, 142 authenticated instances of the disease in an obvious clinical form were reported in the British Isles during the preceding three and a half years. Twenty-one occupations or circumstances were involved and the case fatality rate was 15 per cent.

In Australia also the disease has made its appearance. In October 1933, according to Cotter,⁹ at Ingham, North Queensland, appeared the first of a series of outbreaks of a disease that was regarded as entirely new to that district and which was diagnosed clinically as Weil's disease. This was the first known occurrence of the disease in Australia. This area of North Queensland is the sugar cane area. The favorable climatic conditions and the presence of infected rodents will almost certainly cause this disease to become endemic, Cotter believes, and constitute a constant danger to the health of the workers in the fields. More recently Clayton and Derrick¹⁰ reported a case of "seven day fever" in a patient living near Pomona, South Queensland. The diagnosis was based clinically on the similarity of the patient's symptoms with those of "seven day fever" patients of the East and pathologically on the isolation of a leptospira from the patient's blood. This leptospira, however, proved to be different from a strain isolated in North Queensland and was distinguished by its lower virulence and the absence of cross agglutination. There exist in Queensland, therefore, at least two distinct kinds of leptospiral disease.

Distance in wars and epidemics frequently lends a false sense of security, as has been repeatedly illustrated for both phenomena. In the case of leptospiral jaundice, however, there is sufficient indication that the incidence of the disease in the United States is increasing and even now its incidence is such as to constitute a problem for preventive as well as curative

medicine. Thus Jeghers and his associates¹¹ reported a case with postmortem observations and also reviewed the American cases up to 1935. From this compilation of the reported American cases it can readily be seen, they state, that each case represents a clinical picture which, in spite of minor variations, resembles the classic European and Japanese types of the disease. Occupations of the twelve patients reported up to that time were of interest in that the group included a sewer worker, a member of a swimming team, a cook, a laborer and a fish cutter. Contact with rat-infested buildings was mentioned several times. In one instance the disease developed after the patient had been soaked in rain water. Failure to recognize the disease probably accounts for the report of so few cases in the United States. As they pointed out, the true incidence and future course of spirochetal jaundice in this country will be better determined if the following conditions are fulfilled. The disease must be suspected more often and the variation in symptomatology appreciated, all suspected cases should have laboratory confirmation, laboratories (both public health and hospital) should be prepared to make the necessary diagnostic tests, and serum and prophylactic measures should be utilized when indicated.

In October 1934, according to a report in *THE JOURNAL*, May 9, 1936, an outbreak of jaundice occurred among the students attending a religious novitiate in St. Louis County, Mo.¹² This outbreak involved thirty-two students out of a total of 132. *Leptospira* morphologically identical with *Leptospira icterohaemorrhagiae* was readily demonstrated in samples of water obtained from holy water fonts. While the causal relationship between the leptospira and the outbreak of jaundice could not be proved, it was in some respects of suspicious nature and might in fact be similar to the milder of the two diseases reported from Australia.

In San Francisco¹³ late in 1935, two men working as cribbers in the city sewers became ill and were subsequently diagnosed as having spirochetal jaundice. In March 1937 four more cases of the disease were reported in rapid succession in that city. These cases were entirely unrelated and in different localities. The clinical diagnoses were confirmed by laboratory examination. The examination of rats, by the George William Hooper Foundation for Medical Research, in the vicinity of one case indicated approximately 33 per cent infected by the spirochetes. It seems likely that, if equal care is taken to make a correct diagnosis in cases of obscure jaundice, other cities will find similar cases. Furthermore, if public health authorities carry out investigations on rodent infestation elsewhere, the reservoir in animals may be found high in many parts

6 Wolstencroft, John. Weil's Disease in an English Canal Worker. *Lancet* 1: 86 (Jan. 12) 1935.

7 Swan, W. G. A. and McKeon, J. A. Weil's Disease Among Coal Miners. *Lancet* 2: 570 (Sept. 7) 1935.

8 Alston, J. M. and Brown, H. C. The Epidemiology of Weil's Disease. *Proc. Roy. Soc. Med.* 30: 741 (April) 1937.

9 Cotter, T. J. Weil's Disease in North Queensland. *Brit. M. J. Supp.* 1: 51 (Feb. 1) 1936.

10 Clayton, G. E. B. and Derrick, E. H. The Presence of Leptospirosis of a Mild Type (Seven Day Fever) in Queensland. *M. J. Australia* 1: 647 (May 1) 1937.

11 Jeghers, H. J., Houghton, J. D. and Foley, J. A. Weil's Disease. *Arch. Path.* 20: 447 (Sept.) 1935.

12 Willett, J. C., Sigoloff, Emanuel and Pfau, C. L. An Institutional Outbreak of Epidemic Jaundice. *J. A. M. A.* 106: 1644 (May 9) 1936.

13 Personal communication from Dr. J. C. Geiger, director of public health.

of the country. It seems certain, from the facts of the last three years, that spirochetal jaundice is at least as great a hazard as potentially adjudged three years ago. Individual cases of this disease, while probably more frequent than is generally supposed, are still of sufficient rarity to warrant their careful study and reporting. Any general outbreaks of jaundice are at least partially the responsibility of public health agencies and demand thorough bacteriologic, serologic and rodent examinations.

Current Comment

END RESULTS OF RESPIRATOR TREATMENT

The immediate dramatic results of the use of respirators in failing pulmonary function has received too much attention to necessitate reemphasis. The eventual issue in patients who have received this form of treatment, especially over prolonged periods, is not so well understood. Thus Wilson¹ reported that, in six children who had paralysis of the intercostal muscles and the diaphragm from poliomyelitis without complications, the Drinker respirator was efficient in maintaining pulmonary ventilation for long periods. The use of the machine, however, for nine children with bulbar paralysis without intercostal involvement, although it seemed helpful, was often ineffective. Only two of these nine children survived. In such cases, therefore, he recommends that the machine be employed only as an emergency measure and after every attempt has been made to free the pharynx from secretions. Except for moderate emphysema found at necropsy in three patients with bulbar paralysis, there was no evidence discovered of harm due to its use. Legg² was impressed with the life saving character of the machine in respiratory involvement due to infantile paralysis but noted that a considerable number of patients who survived developed deformities of the chest and many failed to recover the power of voluntary expansion of the chest. Smith,³ in a paper published in 1933, noted that data received from various orthopedic hospitals and convalescent homes revealed that about one third of the respirator patients died and that the cause of death on the hospital records was given as bronchopneumonia. All of twelve patients with bulbar lesions reported by Brahdy and Lenarsky⁴ died. Among thirty-four patients with spinal lesions only, twelve died in the respirator and four within six weeks after treatment. Equally discouraging is the report by Crone⁵ on twenty-four patients with acute poliomyelitis treated in the Drinker respirator. Of the nine having involvement of respiratory muscles only, five died and four survived. Of the ten patients with bulbar involve-

ment all died, and, of the five with both mechanisms affected, three died and two survived. Landon⁶ has reported eighty-eight cases of poliomyelitis treated in the respirator, death occurring in fifty-three in the hospital, a mortality rate of 60.2 per cent. Of the thirty-five patients treated in the respirator able to breathe without difficulty and without artificial aid, sixteen, or 45.7 per cent, had died at the end of eighteen months, practically all of them from respiratory infections. According to another study by Brahdy and Lenarsky,⁷ twenty-seven of sixty-three patients treated in respirators were discharged from the hospital. Twelve of these twenty-seven patients who survived the hospital treatment died at intervals of from two weeks to two and a half years afterward. All of them had residual paralysis of some of the respiratory muscles. Seven of the surviving patients were either bedridden or greatly limited in their physical activities. Seven others alive at the time of reporting were well enough to attend school and two had no residual paralysis whatever.

ORAL VACCINES IN THE "COLD" SEASON

The pharmaceutical business has never been accused of lacking in perspicacity. If one firm seems to be putting over a product, creditable or not, other firms take to the trail. Every seasonable ailment is greeted with preparations, old, new or merely revived. Summer is officially over, and the "season of colds" is already being exploited. During the winter of 1936-1937 Eli Lilly & Co. strenuously advocated the treatment of colds with an oral vaccine, Entoral. Since colds are generally self limiting, scientific evidence on the value of any preparation is hard to obtain. The Council on Pharmacy and Chemistry considered Entoral¹ and pointed out

After a consideration of the available evidence it would seem that the hypothesis on which "Entoral" is based is inadequately supported by experimental evidence and that the reports of its use contained in the literature are insufficiently documented. For these reasons the Council declared "Entoral" unacceptable for inclusion in New and Nonofficial Remedies.

Now the William S. Merrell Company has been circularizing the profession with claims broader and more bombastic than those made for Entoral. Its product is Catarrhal Orava-Merrell described as catarrhal vaccine in enteric coated tablet form. The firm claims that "by the use of Catarrhal Orava it is now possible to immunize large industrial groups against Common Cold at extremely low cost." Where is the evidence? Has any competent industrial surgeon actually established the usefulness of this preparation? Recent advertising mentions only experiments on Merrell's own employees.¹ Is it not likely that the firms hope to have the doctors introduce their oral vaccine preparations to the public as so many other nostrums or preparations of unestablished value have been introduced in the past?

1 Wilson J. L. Respiratory Failure in Poliomyelitis. *Am J Dis Child* 43: 1453 (June) 1932.

2 Legg A. T. The Use of the Drinker Respirator in the After Care of Infantile Paralysis. *J A M A* 100: 647 (March 4) 1933.

3 Smith Emil. Respiratory Failure and the Drinker Respirator in Poliomyelitis. *J A M A* 100: 1666 (May 27) 1933.

4 Brahdy M. B. and Lenarsky, Maurice. Treatment of Respiratory Failure in Acute Epidemic Poliomyelitis. *Am J Dis Child* 46: 705 (Oct) 1933.

5 Crone N. L. The Treatment of Acute Poliomyelitis with the Respirator. *New England J Med* 210: 621 (March 22) 1934.

6 Landon J. F. An Analysis of Eighty Eight Cases of Poliomyelitis Treated in the Drinker Respirator with a Control Series of Sixty Five Cases. *J Pediat* 5: 1 (July) 1934.

7 Brahdy M. B. and Lenarsky, Maurice. Respiratory Failure in Acute Epidemic Poliomyelitis. *J Pediat* 8: 420 (April) 1936.

1 *J A M A* 109: 208 (July 17) 1937.

WISCONSIN'S HALL OF HEALTH

The State Medical Society of Wisconsin, in connection with its annual meeting at Milwaukee during the week of September 14, held an exhibit on health for the public. The "Hall of Health" occupied the main arena of the Milwaukee Auditorium, opening Friday evening September 10 and closing Friday evening September 17. Eighty exhibits were shown, including those of the State Medical Society of Wisconsin, the Medical Society of Milwaukee County, the Woman's Auxiliary, state and local health departments, educational institutions including Marquette University, the University of Wisconsin and national organizations including the American Medical Association, the American Society for the Control of Cancer, the American College of Surgeons and the National Board of Medical Examiners. Special exhibits on roentgenology, sight conservation (Hall of Sight), dentistry, nursing and pharmacy were shown by the several societies of specialists and professional workers. The Camp transparent woman was shown and demonstrated. Motion pictures were running in several of the exhibits, as were special demonstrations of the subjects exhibited. The Wisconsin Anti-Tuberculosis Association displayed its traveling educational exhibit built in a trailer coach. The exhibit was opened with a radio broadcast by an announcer from station WTMJ, who took a portable transmitter into the hall and interviewed the exhibitors as he passed from booth to booth. Newspaper publicity was liberal, intelligent and prominently featured. The public reaction, awaited with interest because of the pioneer nature of this venture under state medical society auspices, was gratifying. The total attendance, estimated from entrance checks and a photoelectric cell counter at the door of the Hall of Sight, exceeded 101,000. Long lines of waiting people formed before the exhibits on cancer, syphilis, embryology, dentistry, nostrums and quackery, health and hygiene, and before the Hall of Sight. Crowds gathered about the transparent woman at every demonstration. The seats in the several motion picture rooms were well filled at most times. Through this venture the State Medical Society of Wisconsin sets a high standard. All important mediums of health education were used and coordinated effectively—the exhibit, the pamphlet, the motion picture, the personal demonstration, the healthmobile, the newspaper and the radio. With a strictly educational and noncommercial policy, it was found possible to get liberal cooperation both in personal service and in financial assistance from the professional groups alone, without contributions from outside sources except the loan of a few exhibits of definitely educational character from commercial sources—lent without advertising or other consideration. In view of the strictly educational nature of the project, the city of Milwaukee donated the use of the auditorium. In some communities health shows are being planned under the sponsorship of local medical societies and in association with health supplements to be issued by leading newspapers. Here the newspaper supports the show, the medical profession determining ethical problems and scientific exactitude. Health education is a major function of the medical profes-

sion. With this venture, the State Medical Society of Wisconsin has demonstrated not only that the profession is able and willing to discharge that function but that the public is eager to accept leadership from responsible sources.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ARKANSAS

Pellagra Survey—Four northern counties of Arkansas have been selected as the area for a survey of pellagra now being conducted by the U. S. Public Health Service in cooperation with the American Red Cross.

Personal—Dr. John J. Andujar, Harrisburg, Pa., has been appointed assistant professor of pathology at the University of Arkansas School of Medicine, Little Rock.—Dr. William B. Grayson, Little Rock, has been reappointed state health officer for a second term of four years.

Society News—A round table discussion on infantile paralysis and syphilis was conducted before the Arkansas County Medical Society in Stuttgart, August 10, by Drs. William B. Grayson, state health officer, Thomas T. Ross, assistant state health officer, Arthur M. Washburn, director, division of communicable diseases, and Walter Myers Smith, director, division of maternal and child health, all of Little Rock.—The Southeast Arkansas Medical Society was addressed at McGehee, July 22, by Dr. Irving J. Spitzberg, Little Rock, on childhood tuberculosis.—The Seventh Councilor District Medical Society was addressed at a meeting in Malvern, August 10, by Drs. George B. Fletcher, Hot Springs National Park, infantile paralysis, and Shelby B. Hinkle, Little Rock, recent advances in obstetrics.

CALIFORNIA

Personal—Karl F. Meyer, Ph.D., chairman of the department of bacteriology and director of the Hooper Foundation for Medical Research, University of California, San Francisco, has been awarded the honorary degree of doctor of medicine at the University of Zurich, Switzerland, his alma mater.

Insects Retain Plague Infection at Least Ten Months—Dr. Walter M. Dickie, director of public health of California, Sacramento, reported to the U. S. Public Health Service, August 9, that specimens of fleas, ticks and lice, taken from ground squirrels (beecheyi) in San Mateo County during September 1936 and stored in the icebox until July of this year, produced typical plague infection when inoculated into guinea-pigs.

DELAWARE

State Medical Meeting at Wilmington, October 11-12—The Medical Society of Delaware will meet at the Academy of Medicine, Wilmington, October 11-13. In addition to clinics at the Wilmington General and St. Francis hospitals, the following will present papers:

- Dr. Lang W. Anderson, Wilmington: Urology. Its Relation with General Medicine.
- Dr. Joseph M. Barsky, Wilmington: Simplified Diabetic Management—A New Regimen.
- Dr. William W. Babcock, Philadelphia: Practical Points in Relation to Clinical Surgery.
- Dr. John J. Cassidy, Wilmington: Pneumonia.
- Dr. Frederic H. Leavitt, Philadelphia: The Danger of Preoperative Delay in Suspected Brain Tumor Cases.
- Dr. George M. Piersol, Philadelphia: Some Aspects of Visceral Syphilis.
- Dr. Brooke M. Anspach, Philadelphia: The Causes and Treatment of Uterine Bleeding.
- Dr. Philip F. Williams, Philadelphia: Cardiac Diseases in Pregnancy with Special Reference to Maternal Deaths from Cardiac Diseases.
- Mr. J. B. McManus, Wilmington: Industrial Law.
- Dr. William Zentmayer, Philadelphia: The Importance of an Eye Examination in the Fourth Decade of Life.
- Dr. Robert H. Ivy, Philadelphia: Tumors of the Mouth and Jaw.

Dr. Charles P. White, Wilmington, will deliver his presidential address Tuesday evening. The New Castle County Medical Society will act as host to the state society during the meeting and Governor Richard C. McMullen will give the address of welcome.

DISTRICT OF COLUMBIA

Dr Overholser to Superintend St Elizabeth's Hospital—Dr Winfred Overholser, formerly commissioner of the Massachusetts State Department of Mental Diseases, Boston, has been appointed superintendent of St Elizabeth's Hospital, succeeding the late Dr William A White. Recently Dr Overholser has been director of the division of mental hospital research of the National Committee for Mental Hygiene. A native of Massachusetts, Dr Overholser graduated at the Boston University School of Medicine in 1916. Until 1924 he served at the Evans Memorial Hospital and the Westborough, Gardner and Medfield state hospitals. From 1925 to 1930 he was director of the division for the examination of prisoners and was assistant commissioner from 1930 until 1934, when he became commissioner. This position he held until late in 1936. He taught psychiatry at his alma mater for several years and has been lecturer at the Boston University of Law since 1929. He served as consultant to the National Crime Commission and as chairman of the committee on delinquents and prisons of the first International Congress of Mental Hygiene. He has been a member of the Committee on Psychiatric Jurisprudence of the American Medical Association since 1929. He is a past president of the Massachusetts Psychiatric Association and in 1936 was president of the New England Society of Psychiatry.

GEORGIA

District Meeting—The Fifth District Medical Society will meet at the Academy of Medicine, Atlanta, October 7, and hear the following speakers:

Dr George W Fuller Atlanta Surgery in Syphilis of the Stomach
Dr Alfred Blalock Nashville Tenn Surgical Treatment of Certain Types of Heart Disease
Dr William G Hamm Atlanta, Observations on Secondary Repair of Harelip
Dr Paul H Ringer Asheville N C Evolution of the Treatment of Tuberculosis

Dr Henry Clifford Sauls, Atlanta president of the Fulton County Medical Society and Dr George A Traylor, Augusta, president of the Medical Association of Georgia, will open the session.

ILLINOIS

Society News—At a meeting of the Kankakee County Medical Society in Kankakee, September 9, Dr Clark W Finnerud, Chicago, discussed "Diagnosis and Treatment of Common Skin Diseases"—Dr Philip F Schneider, Evanston, addressed the Bureau County Medical Society in Spring Valley, September 14, on "Progress in Obstetrics and Gynecology."

Chicago

Personal—Dr Rudolf Schindler, associate clinical professor of medicine, Division of Biological Sciences, University of Chicago, has been promoted to be associate professor of medicine, and Dr Louis Bothman clinical professor of ophthalmology.

Society News—Dr Charles C Dennie, Kansas City, Mo., will be the principal speaker at the first meeting of the season of the Chicago Medical Society, October 13, his subject will be "The Immunological Aspects of Syphilis"—At a meeting of the Chicago Laryngological and Otological Society, October 4, the speakers will include Drs Archibald L Hoyne on "Use of P-Aminophenylsulfanilamide in the Treatment of Scarlet Fever Carriers", John A Bigler, Highland Park, Ill., "Blood Cell Response to Sulfanilamide Therapy," and George S Livingston, "Sulfanilamide Therapy in Otolaryngology"—The Chicago Council of Medical Women was addressed October 1 by Drs Lucille H Snow, Evanston, Ill., on "Cancer in Women" and Bertha Van Hoosen, "Maternal Mortality"—Dr David A Horner was chosen president-elect of the Chicago Gynecological Society at its recent annual meeting and Dr George de Tarnowsky was installed as president. Dr Edward D Allen is secretary.

INDIANA

New Officers of State Medical Board—Dr Leslie C Sammons, Shelbyville, was elected president of the Indiana State Board of Medical Registration and Examination at a meeting September 15 in Indianapolis. Newspapers reported He succeeds Dr Jesse W Bowers, Fort Wayne, who was chosen secretary. E O Peterson, D O La Porte was elected vice president, and Dr William C Moore, Muncie, a new member of the board, treasurer. Other new members include Harry K McIlroy, D C, Indianapolis, and Dr Henry O Bruggeman, Fort Wayne.

New Division of Psychiatry—A division of child psychiatry has been created in the state board of health through the cooperation of the state welfare department, the Indiana State Medical Association, the state department of public instruction and the Indiana University School of Medicine, Indianapolis. Dr Elsie Elizabeth Welsch, who has been associated for the past two years with the Philadelphia Child Guidance Clinic and has completed an internship at the Institute of the University of Pennsylvania, has been appointed director of the new division. A program will be established to deal chiefly with the preventive aspects of child psychiatry and to include consultation services to rural schools wherever special problems arise and where special schools or training are not available. In addition, a psychiatric clinic will be held regularly in connection with the outpatient department of the Riley Hospital for Children, Indianapolis, and arrangements have been made to teach the subject to the students at the school of medicine. Dr Welsch graduated from Indiana University School of Medicine in 1932.

KENTUCKY

Changes in Hospital Superintendents—Dr Elbridge L Busby, superintendent of the Western State Hospital, Hopkinsville, has been transferred to the Central State Hospital, Lakeland. Dr James B Markey, now acting superintendent at Lakeland, has been appointed to succeed Dr Busby at Hopkinsville.

State Medical Election—Dr William E Gardner, Louisville, was chosen president-elect of the Kentucky State Medical Association at its annual meeting in Richmond September 13-16, and Dr Henry G Reynolds, Paducah, was installed as president. Vice presidents were elected as follows: Drs Robert Sory, Richmond, Elbert W Jackson, Paducah, and Frank M Stites Jr, Louisville. The 1938 meeting will be held in Louisville.

MICHIGAN

Society News—Dr William T King, Ahmeek, was elected president of the Upper Peninsula Medical Society at its annual meeting in Houghton, August 19-20. Sault Ste Marie was chosen as the place for the 1938 meeting.—Dr Wendell G Scott, St Louis, discussed "The Kymograph" before the Muskegon County Medical Society, September 17, in Muskegon.

Graduate Short Course in Obstetrics—A refresher course in obstetrics will be conducted in five areas of the Upper Peninsula, beginning October 4, under the auspices of the Michigan Department of Health, the department of postgraduate medicine of the University of Michigan, Ann Arbor, and the county and district medical societies. The five centers are Sault Ste Marie, Escanaba, Marquette, Houghton and Ironwood, where lectures in obstetrics will be given one evening each week for four weeks. The five lecturers are:

Dr Howard H Cummings assistant director of postgraduate medicine at the university. Care of the Pregnant Woman and Management of Toxemias and Other Complications of Pregnancy
Dr Norman R Kretschmar assistant professor of obstetrics and gynecology. The Conduct of Normal Labor
Dr Harold A Furlong Pontiac Hemorrhagic Complications of Pregnancy and Labor Including Placenta Praevia and Postpartum Hemorrhage
Dr Alexander M Campbell Grand Rapids Other Complications of Labor Including Prolonged Labor Difficult Labor Forceps Version and Operative Deliveries

Dr Furlong and Dr Campbell are members of the maternal health committee of the state medical society, the latter being chairman.

MISSOURI

Marriott Memorial Pediatric Fund—Plans are under way to create the Marriott Memorial Fund for Research in Pediatrics, in honor of the late Dr Williams McKim Marriott, formerly professor of pediatrics and dean of Washington University School of Medicine, St Louis. The following are members of a committee in charge of the project: Dr Malvern B Clopton, George R Throop, Ph D, Philip A Shaffer, Ph D, present dean of the medical school, Dr Alexis F Hartmann and Dr Park J White Jr. Persons wishing to contribute to the fund are asked to send their donations or pledges to any member of the committee or the dean's office of the university. Checks should be made payable to the university. In addition to the endowment to serve in his memory, a portrait of Dr Marriott has been procured to hang in the St Louis Children's Hospital. The cost of the portrait will be paid from the principal of the fund while the income from the remainder will be devoted to research in the field of pediatrics. Dr Marriott served as professor of pediatrics at Washington from 1917 to 1936 and as dean from 1923 to 1936.

Tuesday Is "Medical Day" in Kansas City—A series of graduate courses will be presented by the Jackson County Medical Society at the Kansas City Municipal Hospital number 1 over a period of forty weeks during 1937-1938. The first course opened September 14 with psychoanalysis as the subject. As Tuesday has been designated "Medical Day" in Kansas City, the courses will be held each Tuesday, a different number of weeks to be allotted to each subject. The one dealing with psychoanalysis will run for six weeks, with Dr. George Leonard Harrington as instructor. Other subjects to be considered in future programs will include diabetes endocrinology, immunology, electrocardiography, roentgenographic interpretation, physical diagnosis, bacteriology, clinical chemistry, postmortem examinations, hematology, interpretation of laboratory work, recent advances in laboratory diagnosis, tumors and urinalysis. A course on legal medicine will be conducted by members of the Kansas City Bar Association. From 5 to 6:30 each Tuesday for twenty consecutive weeks, a medical speakers' clinic will be conducted by the society to include practical instruction and practice in the essentials of speechmaking. Albert H. Johnstone, formerly director of the school of speech of the Horner Conservatory and College, is the instructor.

NEW YORK

Promotions in the Health Department—Dr. Vivian A. Van Volkenburgh, health officer in charge of the Ithaca district, has been promoted to be assistant commissioner of local health administration, and Dr. Ernest L. Stebbins, in charge of the Rochester district, to be director of communicable diseases in the New York State Health Department.

Three Cases of Psittacosis—Three cases of psittacosis in one family in upstate New York were reported in *Health News* September 13. The first case was in the father of the family, who raised birds as a hobby and had an aviary of more than 100 birds. He had not allowed any one else than himself to care for the birds until he became ill July 1 after which his wife and daughter took charge of them. Subsequently they also became infected with psittacosis. Investigation revealed that about two weeks before the man became ill several types of birds had died of unexplained illnesses. The source of the infection had not been determined at the time of the report.

New York City

Fifth Health Center Opened—The new Richmond Health Center at St. George, Staten Island, fifth of the city health department's district health centers, was dedicated September 14 with Mayor La Guardia and Dr. John L. Rice, city health commissioner, as the principal speakers. The building, financed with PWA funds of \$336,436, has four floors with space for maternity, child, dental, tuberculosis and social hygiene health services, as well as bureaus of general administration, records, preventable diseases and laboratories.

Lectures on Heart Disease—The New York Heart Association of the New York Tuberculosis and Health Association announces that its second series of lectures for practicing physicians on diseases of heart will be presented at biweekly intervals during the winter. The first lecture will be by Dr. Irving R. Roth, Tuesday afternoon, November 9, on "Management of Patients with Heart Disease" in the Blumenthal Auditorium at Mount Sinai Hospital. The course is open to all practicing physicians without registration or admission fee.

Hospital Bequest—Mount Sinai Hospital will receive \$916,579 as the residuary legatee under the will of the late Marco Fleishman, a tobacco merchant, according to an appraisal reported recently. The will provided that the bequest is to be known as the Rosetta and Marco Fleishman Fund and will be used for the construction and equipment of a new building or extension of the existing buildings to care for persons in the early stages of tuberculosis. In addition to this bequest, the hospital is to receive the principal of trust funds amounting to \$270,000 on the deaths of various persons for whom the trusts were created.

OHIO

State Association Organizes Speakers' Bureau—The Ohio State Medical Association has organized a speakers' bureau to assist county and district medical societies in obtaining outside talent for their programs. Later it is expected that the facilities of the bureau may be made available for meetings of allied and lay groups. The new bureau was organized as a part of the activities of a new committee on education, of which Dr. Clyde L. Cummer, Cleveland, is chairman. The subcommittee on the speakers' bureau is composed of Drs.

Russel G. Means, Columbus, chairman, Hubert C. King, Lakewood, Howard H. Minor, Steubenville, William M. Singleton, Portsmouth, and Karl D. Figley, Toledo.

Northwestern Ohio Annual Meeting—The ninety-third annual meeting of the Northwestern Ohio Medical Association will be held in Lima, October 5. A preliminary announcement lists the following speakers:

Dr. John S. Coulter, Chicago, Physical Therapy in Treatment of Arthritis
Dr. Raymond C. McKay, Cleveland, Treatment of Tuberculosis in the Sanatorium and in the Home
Dr. Sidney M. McCurdy, Columbus, The Relation of the Industrial Commission to the Physician
Dr. Walter H. Hartung, Columbus, Syphilis Control in Ohio
Dr. Carroll S. Wright, Philadelphia, Treatment of Syphilis
Dr. Dean D. Lewis, Baltimore, subject not announced
Dr. Frederick C. Irving, Boston, subject not announced

PENNSYLVANIA

District Meetings—The annual meeting of the Second Council District of the Medical Society of the State of Pennsylvania was held September 16 at the Plymouth Country Club near Norristown, with the following speakers: Drs. John O. Bower, Philadelphia, on "Radicalism versus Conservatism in the Management of the Acute Abdomen", Richard A. Kern, Philadelphia, "Clinical Allergy," and Chauncey L. Palmer, Pittsburgh, chairman of the state society committee on public health legislation, "Legislative Activities."—The west section of the Fifth Council District held its thirty-first annual meeting in Carlisle, September 16. Dr. Edward L. Bortz, Philadelphia, chairman of the state society committee on pneumonia control, gave an address on "Pneumonia Control—A Major Responsibility of the General Practitioner", Dr. Walter F. Donaldson, Pittsburgh, secretary of the state society, "The State Medical Society Reports to Its Components," and Dr. Harvey F. Smith, Harrisburg, "Acute and Chronic Appendicitis as Related to the General Practitioner."

Philadelphia

Four Solicitors for Fake Hospital Drive Sentenced—Four men were sentenced to jail terms September 22 following their conviction of carrying on a fake hospital charity drive for the "Naturopathic Hospital," in which they collected about \$30,000, newspapers reported. Fourteen men and a woman were arrested last April after an investigation by a Philadelphia newspaper and the Better Business Bureau. It was said that a group of promoters conducted the campaign from two hotels by telephone, selling tickets to a dance which was to have been held April 30. In their appeals the solicitors impersonated physicians and sold the tickets on the plea that the money was to be used for care of patients with infantile paralysis. During the trial it was pointed out in the newspapers that the "Naturopathic Hospital" had no beds for patients, but did have electrical and what "seemed to be surgical equipment." The state contended that the hospital was only a blind for the racket that paid its operators 97 per cent of the money contributed. Thomas J. Goldberg, superintendent of the "hospital," Harry S. Nurock, secretary of the Pennsylvania Society of Naturopaths, and Charles Reichner, a promoter, received sentences of two years each, and Robert Hoffman, the chief promoter, one year in the county jail. Charles L. Thomson, a solicitor, received a suspended sentence and George Brent, another solicitor, had his sentence deferred because he was reported to be ill in a hospital. These six men were convicted May 11. Of nine others on trial, the judge acquitted seven and the jury two. Those who were convicted have appealed to the supreme court.

Pittsburgh

Hospital News—The annual "Mercy Day" celebration at Mercy Hospital was held September 23 with Mayor Gen. Charles R. Reynolds, surgeon general, U. S. Army, Washington, as the speaker on "Medicine in the Military Service."

Society News—The first fall meeting of the Allegheny County Medical Society was held at the Mellon Institute Auditorium September 21 with Dr. Fred H. Albee, New York, as the guest speaker on "The Importance of the Lever at the Top of the Femur and Its Surgical Importance."

TENNESSEE

Society News—Dr. William F. Copeland, Cornersville, addressed the Giles County Medical Society, Pulaski, August 28, on enuresis.—Among speakers at a meeting of the Dyer, Lake and Crockett Counties Medical Society in Dyersburg, September 1, were Drs. Edward B. Smythe, Tiptonville, on

"Zinc Protamine Insulin in the Treatment of Diabetes Mellitus", John E. Frazier, Newbern, "Sulfanilamide and Allied Chemicals" and Bernard W. Patton, Dyersburg, "Syphilis"—Dr. James L. Heffernan, Jellico, addressed the Campbell County Medical Society, LaFollette, August 26, on sulfanilamide.

UTAH

State Medical Meeting and Election—The forty-third annual meeting of the Utah State Medical Association was held in Salt Lake City, September 24, with headquarters at the University of Utah. The guest speakers were:

- Dr. William B. Carrell, Dallas, Texas: Treatment of Knee Disability Resulting from Injury to Crucial or Collateral Ligaments and from Faulty Muscle Support; Treatment of Fractures of the Neck of the Femur.
- Dr. Henry Hunt Searls, San Francisco: Closure of Surgical and Traumatic Wounds; Modern Concept of the Pathologic Diagnosis and Treatment of Thyroid Diseases.
- Dr. Winchell McK. Craig, Rochester, Minn.: Importance of Adequate Treatment in Injuries of the Head; Influence of Early Diagnosis on the Surgical Treatment of Tumors of the Brain.
- Dr. Claude F. Dixon, Rochester, Minn.: Cancer: Its Curability; Acute Abdominal Disease.
- Dr. Morris Edward Davis, Chicago: Use and Abuse of Cesarean Section.
- Dr. Ole A. Nelson, Seattle: Aortography for Diagnosis of Renal and Abdominal Conditions; Cervicitis in Relation to Urinary Symptoms and Backache.
- Dr. William W. Swanson, Chicago: The Commonly Missed Pediatric Diagnosis.
- Dr. Harry C. Warren, San Francisco: Surgery versus Conservatism in the Treatment of Pulmonary Tuberculosis.
- Dr. Edward William Alton Ochsner, New Orleans: Conservative and Radical Treatment of Bronchiectasis; Peripheral Vascular Disease.
- Dr. William D. Stroud, Philadelphia: Etiology of Cardiovascular Disease; Coronary Diseases Including Angina Pectoris; Clinical Efficacy of Digitalis Preparations.
- Dr. Robert T. Legge, Berkeley, Calif.: Occupational Diseases and Their Relation to the Medical Profession; Carbon Monoxide Poisoning and Its Treatment.
- Dr. Donald C. Collins, Los Angeles: Value of Papaverine Hydrochloride in the Treatment of Postoperative Pulmonary Embolism.
- Dr. Clarence M. Hyland, Los Angeles: Value of Convalescent Serum in Acute Contagious Diseases.

Before the meeting Dr. Swanson and Dr. Davis presented a course of lectures on pediatrics and obstetrics, respectively, August 31 and September 1. Dr. Claude L. Shields, Salt Lake City, was chosen president-elect and Dr. Menzies J. Macfarlane, Cedar City, was installed as president. Vice presidents elected were Drs. Donald A. McGregor, St. George, Jennings G. Olson, Ogden, and Warren O. Christenson, Wellsville. Dr. David G. Edmunds, Salt Lake City, was made secretary for three years.

VERMONT

Society News—Dr. William Wayne Babcock, Philadelphia, addressed the Rutland County Medical Society at a meeting in Rutland July 13 on surgical conditions of the stomach.

State Medical Meeting at St. Johnsbury—The one hundred and twenty-fourth annual meeting of the Vermont State Medical Society will be held in St. Johnsbury at the Vermont State Armory, October 13-15. A symposium on "Practical Surgery for the General Practitioner" will be presented by the following, all of the faculty of Temple University School of Medicine, Philadelphia: Drs. William Wayne Babcock, William A. Steel, Wilbur Emory Burnett, John Royal Moore and William Edward Chamberlain. Other speakers will be:

- Dr. Roscoe G. Leland, Chicago: Director, Bureau of Medical Economics; American Medical Association: A Challenge to Medicine.
- Dr. Walter Schiller, Vienna and New York: Early Diagnosis of Cancer of the Cervix Uteri.
- Dr. Francis M. Rackemann, Boston: Practical Points in the Diagnosis of Asthma and Hay Fever.
- Dr. William G. Ricker, St. Johnsbury: The presidential address: Modern Ideas in Diagnosis and Treatment as Exemplified by Hippocrates.
- Dr. Waldo J. Upton, Burlington: vice presidential address: Cerebral Arteriosclerosis.
- Dr. Christopher C. Shan, Bellows Falls: Agranulocytic Angina.
- Dr. DeC. Forest Jarvis, Barre: Clinical Experiences with Nondiabetic Use of Three Unit Doses of Insulin.

The sound film "Syphilis," produced by the American Medical Association and the U. S. Public Health Service, will be shown Thursday afternoon, October 14, at the Star Theater. The annual banquet will be held Thursday evening at the St. Johnsbury House, with Dr. Frank E. Farmer, St. Johnsbury, presiding.

VIRGINIA

Pediatric Clinician Resigns—Dr. Jay M. Arena, who has been the field clinician in pediatrics conducting graduate courses under the auspices of the department of clinical and medical education of the Medical Society of Virginia, has resigned to become associate professor of pediatrics at Duke University School of Medicine, Durham, N. C. Dr. Arena was graduated from Duke in 1932 and was associate in pediatrics on the faculty at the time of his appointment in Virginia late in 1936.

State Medical Meeting at Roanoke, October 12-14

The sixty-eighth annual session of the Medical Society of Virginia will be held in Roanoke, October 12-14, at the Hotel Patrick Henry. The meeting will open with clinics Tuesday afternoon conducted by Drs. Frank H. Lahey, Boston, on "Thyroids" and Winchell McK. Craig, Rochester, Minn., on "Surgical Treatment of Hypertension". They are the guests of the Roanoke Academy of Medicine. At the opening general session Tuesday evening Dr. James Morrison Hutcheson, Richmond, will give his presidential address and Dr. Russell L. Cecil, New York, will speak on "Pneumonia as a Public Health Problem". Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C., will also be a guest, speaking on "The Part of the Practicing Physician in Syphilis Control". Among Virginia physicians who will participate in the program will be:

- Drs. James P. King and Frank A. Strickler, Radford: Insulin Shock; Treatment of Dementia Praecox.
- Dr. William B. Porter, Richmond: Nutritional Deficiencies and Their Relation to the Clinical Course of Heart Disease.
- Dr. James Asa Shield, Richmond: Fever, Malaria and Short Wave in Treatment of Neurosyphilis.
- Dr. Thomas D. Walker, Newport News: Determination of the Urinary Excretion of Ascorbic Acid (Vitamin C).
- Dr. Richard W. Garnett, Danville: Hospitalization by the Group Payment Plan on a Statewide Basis.
- Drs. Dudley C. Smith and Joseph M. Hitch, Charlottesville: Skin Manifestations in Tularemia.
- Drs. John S. Horsley, John S. Horsley Jr. and Guy W. Horley, Richmond: Improved Methods of Treatment for Appendicitis.

Wednesday afternoon there will be round table discussions of treatment of heart disease, obstetric problems, minor surgery, diarrhea, mental hygiene, treatment of trochanteric fractures of the femur by means of internal and external fixation, ray treatment of infection and treatment of nonvenereal urinary tract infections.

WISCONSIN

Special Meeting of the State Board—The Wisconsin State Board of Medical Examiners will hold a special meeting October 14 at the Hotel Witter, Wisconsin Rapids, for consideration of reciprocity applicants only. Dr. Henry J. Gramling, Milwaukee, is secretary of the board.

Society News—Drs. Everett D. Plass, Iowa City, and Hugh A. Cunningham, Milwaukee, will address the Medical Society of Milwaukee County, Milwaukee, October 8, on "Toxemias of Late Pregnancy" and "Obstetrical Anesthesia and Analgesia" respectively. Dr. Herman A. Heise, Milwaukee, will be the speaker for the special feature "Fifteen Minutes of Preventive Medicine," on "Bacterial Allergy."—Drs. Walter G. Sexton and Robert S. Baldwin, Marshfield, addressed the Green Lake-Wausara County Medical Society, Wautoma, August 12, on "Infections of the Urinary Tract" and "Diabetes Mellitus" respectively.

GENERAL

International Dermatologic Congress in New York—The tenth International Congress of Dermatology and Syphilology will be held in New York in September 1940, it is announced. Dr. Oliver S. Ormsby, Chicago, is president general of the congress and Dr. Paul A. O'Leary, Rochester, Minn., secretary general.

Automobiles Kill 196—Deaths caused by automobiles in 125 major cities in the United States during the week ended September 18 totaled 196, six fewer than in the corresponding week of last year, according to the bureau of the census of the U. S. Department of Commerce. Los Angeles recorded the highest total with eighteen deaths, Chicago placed second with sixteen deaths and New York third with thirteen. Most of the cities reporting have a population of 100,000 or more, it was stated.

Annual Safety Congress in Kansas City—The twenty-sixth National Safety Congress and Exhibition will be held in Kansas City, Mo., October 5-8, at the Municipal Auditorium under the presidency of Dr. Cassius H. Watson, New York. Among physicians scheduled to participate in the program are:

- Dr. Harold A. Vonachen, Peoria, Ill.: Placement of Men from the Standpoint of Physical Fitness.
- Dr. Louis Schwartz, U. S. Public Health Service, New York: Industrial Dermatitis and Its Prevention.
- Dr. Richard D. Mudd, Saginaw, Mich.: Industrial Burns and Their Treatment.
- Dr. Hymen I. Spector, St. Louis: Industrial Tuberculosis—A Public Health Factor.
- Dr. Glen E. Kassebaum, El Dorado, Kan.: The Worker's Health.
- Dr. James R. Garner, Atlanta: Fatigue and Its Relation to Accident Prevention.
- Dr. Royd R. Sayers, U. S. Public Health Service, Washington, D. C.: What Industrial Dusts Are Hazardous? Why?
- Dr. Allen D. Lazenby, Baltimore: The Doctor's Part in Controlling Dust Hazards.

Dr Roy R Jones U S Public Health Service Washington, Metal Fume Poisoning and Its Prevention
Dr Peter B Rastello Detroit Electroplating Fumes and Vapors and Their Elimination

Clinical and Climatological Meeting—The fifty-fourth annual meeting of the American Clinical and Climatological Association will be held in Baltimore at the Belvedere Hotel, October 11-13. Among speakers on the program will be

Dr Francis M Rackemann Boston Molds as a Cause of Hay Fever and Asthma
Dr Alvin H Gordon Montreal The Mental Complications of Heart Disease
Dr Joseph T Wern, Cleveland Is Hypertrophy of Heart Muscle Beneficial?
Dr Stride D Blackford Charlottesville Va Similarities of Tuberculosis to Tuberculosis
Dr John H Musser, New Orleans Deficiency Disorders as Observed in the Far South
Drs Thomas M Rivers S M Ward and Robert D Baird New York Vaccination Against Smallpox by Means of Intradermal Inoculation of Cultured Vaccine Virus
Dr Henry Rawle Geyelin New York Treatment of Diabetes with Protamine Insulin

Dr Warfield T Longcope, Baltimore, will deliver the Gordon Wilson Lecture Tuesday at noon on "The Varieties of Hemorrhagic Nephritis and Their Prognostic Significance." At the annual dinner Tuesday evening Hon Morris A Soper, Baltimore, judge of the United States District Court, will be the speaker on "Medicine and the Law."

Southern Psychiatric Association—The annual meeting of the Southern Psychiatric Association will be held at the Gunter Hotel, San Antonio, Texas, October 8-9, under the presidency of Dr William D Partlow, Tuscaloosa, Ala. Dr William H Cade Jr, San Antonio, president, Beaver County Medical Society, will give the address of welcome, and speakers will include

Dr George T Harding Columbus Ohio Periodicity of the Manic Depressive Psychoses
Dr Giles W Day, Galveston Texas Newer Methods of Psychiatric Treatment
Dr Whitman C McConnell St Petersburg Fla Endocrinology in Psychiatry
Dr Guy F Witt Dallas Texas Mental Disturbances Due to Bromide Intoxication
Dr James A Willie Houston Texas Analysis of a Case of Hysteria
Dr Isham Kimbell Lexington Ky Necessity for Comparative Study of Schizophrenic and Organic Reaction Types of Psychoses
Dr Walter J Otis New Orleans, Childhood's Early Symptoms of Mental Hygiene Problems
Dr David Henry Poer Atlanta Ga Psychoses Due to Thyroid Disorders
Dr Philip Smith New York Psychiatric Work in New York Institutions
Dr C Charles Burlingame Hartford Conn Can the Point of View and Technique of Private Practice Be Carried into the Mental Hospital?
Dr George R Herrmann Galveston Neurocardiac and Neurocirculatory Disorders
Dr Witten B Russ San Antonio Psychoses Complicating Surgical Cases
Dr Newdigate M Owensby Atlanta Sanity in Psychiatry

American College of Surgeons—The twenty-seventh annual Clinical Congress of the American College of Surgeons will be held at the Stevens Hotel, Chicago, October 25-29, under the presidency of Dr Eugene H Pool, New York. In addition to clinics and demonstrations, the program includes symposiums on cancer, industrial medicine and traumatic surgery and fractures, and conferences on obstetrics and gynecology and on graduate training for surgery. Certain sessions will make up the annual hospital standardization conference. At the various evening sessions, the following speakers, among others, will present papers

Dr James H Means Boston Indications for Surgery in the Treatment of Peptic Ulcer
Dr Roscoe R Graham Toronto Technique of Surgical Treatment in the Treatment of Peptic Ulcer
Dr Howard C Naffziger San Francisco, Nucleus Pulposus and Lower Back and Sciatic Pains
Dr Dean Lewis Baltimore Relation of Chronic Cystic Mastitis to Cancer of the Breast
Dr Cecil K Drinker Boston, Genesis and Consequences of Lymphedema
Dr Willis D Gatch Indianapolis Circulatory and Lymphatic Disturbances in the Abdomen
Dr Claude F Dixon Rochester Minn Diverticula of the Intestine
Dr Henry W Cave New York Immediate or Delayed Treatment of Acute Cholecystitis (Liver Shock and Death)
Dr Frank Hinman San Francisco Tuberculosis of the Kidney
Dr John Mason Hundley Jr Baltimore Physiologic and Pathologic Changes in the Urinary Tract During Pregnancy
Dr Irvin Abell Louisville Ky President Elect American Medical Association Acute Pancreatitis

A feature of the presidential meeting and convocation Monday evening will be the annual college oration on surgery to be delivered by J P Lockhart-Mummery, M B, London, England, on "The Surgeon as a Biologist." Introduction of foreign guests will take place on this occasion. The oration on fractures will be presented Thursday evening by Dr William O Sherman, Pittsburgh, on "The Present Status of the Operative Treatment of Fractures."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 4, 1937

Annual Meeting of British Association for Advancement of Science

In his presidential address before the British Association for the Advancement of Science Sir Edward Poulton surveyed the controversy on evolution, which he had witnessed at the meetings of the association since the doctrine was first presented there fifty years ago. Although it was a relatively easy matter to establish that evolution occurs, the causes are extremely complex and even today are a matter of dispute. He supported Darwin's theory of natural selection. From his own experience as an entomologist he brought forward evidence incompatible with Lamarckian evolution. In the relation between predatory animal and victim there was commonly no opportunity for the latter to learn by means of experience. The elaborate adaptations by which sedentary insects remained hidden from their enemies were evolved not by contact but by avoidance of enemies. An example was the resemblance of certain caterpillars to twigs. They fed only by night and spent the day rigid, their attitude simulating a twig. Carrick had recently shown that this device completely deceives hungry birds. An example of "prophetic instinct" was found in the maggot of an African fly. It lived in soft mud which, during the dry season when the chrysalis stage was reached, would be traversed by deep cracks in which insectivorous birds could search. While the mud was still soft the maggot prepared for danger. By tunneling spirally up and down it made a line of weakness which caused a pillar to separate from the mass when the mud hardened and contracted. It then tunneled into the still soft pillar, where it became a chrysalis. However wide the cracks, the maggot had arranged that they would not involve the cylinder. This prophetic instinct could be explained only by the operation of natural selection.

An explanation of evolution different from both Lamarckism and Darwinism has been styled orthogenesis. It means evolution in a definite direction as the result of predetermined internal tendencies. But, as Dyer said in an address at a previous meeting of the association, this was like explaining the movement of a train by a tendency to locomotion. Darwin lifted the whole matter out of the field of mere transcendental speculation by the perfectly intelligible mechanism of natural selection.

In many quarters Mendelism was at first regarded as antagonistic to Darwinism. But the older belief that only large variations—mutations, as they were called—were subject to Mendelian inheritance, and that small variations were not inherited, disappeared by further investigations. The foundation of Darwinism thus became immensely strengthened.

Sir Edward Poulton ended his address by referring to "the greatest of the problems by which we are faced—the end of international war." The physiologist Michael Foster, in his address to the association in 1899, said that "happily the very greatness of the modern power of destruction is already becoming a bar to its use." Many looked on the great war and later wars as the end of Foster's dream of peace, but Sir Edward hoped that the association did not thus despair. He referred to the address of the paleontologist Sir Richard Owen, delivered in 1858, who in referring to the transatlantic cable said "We may confidently hope that this and other applications of pure science will tend to abolish wars over the whole earth." Confident words were inspired by the forging of a new link between the two great English speaking nations. Nearly eighty years had passed, but with all the terrible disappointments

there had been great progress. A time would surely come, and might it come quickly, which would prove that this dream was prophetic.

TESTS FOR COLOR BLINDNESS

In her presidential address to the Section of Psychology, Dr. Mary Collins discussed the tests in common use for the detection of color blindness. The most common and the most important form of color blindness was red-green. Recent figures gave the percentage of the population affected as from 5 to 12, in contrast with the older figure of from 3 to 4. Her own result was 7.5. The figures did not indicate that the defect is increasing but that detection is more accurate owing to improved tests. It is gradually being realized that there are many degrees of this defect. In extreme forms there was complete blindness to red and green, but in a milder form these colors could be discriminated if conditions were favorable, but when unfavorable, as in mist or fog, the colors were confused. Tests for color defects fell into two categories, in which transmitted and reflected light were respectively used. While the former was regarded as more fundamental, the latter could be of great service for quick diagnosis. As spectrometric examination was not always possible, the lantern or pigment test could be used as a substitute. Both were essential when lack of color discrimination involved risks to the community. Another category was that of persons with unequal sensibility to red and green. Some were "red weak," others "green weak." Difficulty of detection of color blindness was increased by the deliberate tricks practiced by affected persons to avoid detection. One man suffering from complete red-green color blindness was yet able to make passable copies of paintings. To obtain green he mixed blue and yellow but never used green paint, even though to normal eyes it might be an exact match.

SELF HYPNOTISM

Before the Section of Psychology Dr. William Brown, Wilde reader in mental philosophy and director of the institute of experimental psychology, University of Oxford, read a paper on "Hypnosis, Suggestibility and Progressive Relaxation." He said that, although it was true that persons of certain pathologic types were easily hypnotizable, relatively normal people were also hypnotizable to different degrees. In the hypnotized and relaxed state the statements made to the patient should always be positive in character. In this way not only might faulty mental function be rectified but mental powers, such as concentration and memory, might be increased above normal. Inhibitions, doubts, conflicts and fears of failure could be removed, and the power of imagination of success, which was of extraordinary importance in many of these cases, could be reinforced.

Almost anybody with care, deliberation and concentration could hypnotize himself. "You must concentrate your mind on a point of the far distant horizon. Relax your muscles completely and say to yourself 'I am getting drowsy.' While in this state you must make suggestions to yourself of increased powers—such as that you will have a good night's rest tonight, or you are going to make a speech tonight without stammering. You can do that without harm to yourself and with great benefit." Dr. Brown thought that, whatever opinions might be held with regard to the political aims of the totalitarian countries, their methods of attaining national efficiency under individual leadership found support in modern psychology.

THE SEX RATIO

For the subject of his presidential address to the Section of Zoology, Prof. F. A. E. Crewe took "the sex ratio," on which he commented mainly in relation to the human species. He said that the statistical review of the registrar general was one of the most interesting zoological papers to appear each

year, "as a progress report of a vast and exciting zoological experiment which we are conducting scientifically or otherwise, with ourselves as the experimental material." The primary sex ratio (the ratio at conception) was in this country about 120 males to 100 females, but as the males were more delicate at all ages the numbers became equal in late adolescence, and in maturity the females outnumbered the males, until at the age of 85 and over women were more than twice as numerous as men. Professor Crewe believed that the greater delicacy of the male was an instance of a general principle applicable to the male of all organisms and was due to the male having a higher rate of metabolism, which made him less resistant to unfavorable conditions. The sex ratio at birth was "an instrument of precision by which a human society may measure the quality of its structure," a yardstick to determine the success of social services and health measures. The equality of the sexes in early maturity he regarded as brought about by adaptive adjustment of the primary sex ratio and differential sex mortality to give equal numbers of males and females at the optimal period for reproduction. The precise sex ratio of a species must not be regarded as a biologic accident but as a delicate adjustment of contrary forces brought about by selection during the course of gestation.

In the discussion, Dr. Walton of Cambridge reviewed the possible methods by which the sex ratio could be experimentally controlled. In mammals the most promising line of attack was to find some means of separating the male determining from the female-determining sperms. This was theoretically possible and might be of enormous economic importance in stock breeding and might open new vistas in economic biology.

PARIS

(From Our Regular Correspondent)

Sept 4, 1937

International Congress for the Protection of Children

The twelfth International Congress for the Protection of Children was held in Paris, July 19-21 inclusive, with the secretary of public health, Mr. Mark Rucard, presiding. The work of the congress was taken up in four sections. In the medical section the first paper was by Drs. Lesne and Huber of Paris on the diet for children of school age as agreed on by the majority of foreign and French pediatricians. This was 100 calories on the average per hundred kilograms and a well balanced ration including from 55 to 60 per cent of carbohydrates, 30 per cent of fats and 15 per cent of proteins. Dr. Koenen of the Netherlands called attention to the danger of underfeeding due to unemployment and the necessity of teaching the proper preparation and utilization of foods. Grulee of Chicago emphasized the existence of the individual factor and the need of vitamins. Messerli of Switzerland showed the close relation between adequate feeding and resistance to infection. Rickets and hypotrophy are at present increasing in frequency, a direct result of unemployment and underfeeding. Veras of Greece stated that in countries bordering on the Mediterranean a great deal of bread is eaten. Meat is replaced by fish, butter by oil. Vegetables and fruit are plentiful. The subject of convulsions in infancy was discussed by a number of speakers. There was general agreement that the syndrome may be due to a number of different causes and that the prognosis was not favorable from the psychic and neurogenic points of view. About 60 per cent of epileptic persons give a history of convulsions in infancy, according to Dr. Babonniere, who was particularly pessimistic as to the future of children who have had convulsions in infancy. The treatment must be both symptomatic and causal. The most frequent causes are obstetric trauma, heredo-alcoholism, hereditary syphilis and encephalopathies due to a not yet identified virus, often latent until the convulsions appear.

The pedagogic section discussed the legitimacy, effects and mode of application of punishment. Corporal chastisement ought never to be used after the age of 7. Punishment is not only legitimate but necessary in order to arouse a sense of judgment, of self criticism and of social duty in children. Punishment should be judiciously stimulating and never create an inferiority complex in the child. At school, as at home, an effort should be made to arouse the spiritual value of being good and a sense of responsibility.

In the legal section there was general agreement with regard to the great value of juvenile courts. These were established in France in 1935. Their objectives should be both penal and educative under surveillance as wards of the courts. The influence of the cinema was favorably commented on, but surveillance was deemed indispensable for children.

In the social section, Dr Devraigne called attention to the widespread existence of inadequate housing in France. Eighteen per cent of the families have only one room, and in the larger cities 26 per cent of the homes are occupied by too many persons. Ten per cent of these 26 per cent have one room for three persons, 33.7 per cent one room for from five to seven persons, and 40 per cent one room for seven persons. This overcrowding is responsible for physical, social and moral defections.

Congress of Medicine as Applied to Physical Education and Sports

The first International Congress of Medicine as applied to Physical Education and Sports was held in Paris July 11-17. Many representatives of foreign countries took part in the program. The necessity of medical surveillance of physical education in childhood and adolescence was the subject of many of the papers. Examination of the heart in its reaction to effort was discussed by Laubry of France, and Van Boggaert and Brouha of Belgium. A study of the fatigue or obstacle reaction test of respiratory capacity was reported by Donaggio of Italy. The necessity of close cooperation of the teacher, physical instructor, parents and physician was emphasized in papers read by Oelsnitz of France and Giovanni of Italy. Demonstrations were given by pupils of the Irene Popard and Susanne Lenglen schools of Paris and by members of the officers' physical culture center near Paris.

Meeting of French Orthopedic Congress

The president of this year's French Orthopedic Congress, which will be held in Paris, October 7-9, will be Prof Etienne Sorrel. The first day will be devoted to clinics at various Parisian hospitals. At the second day's session, papers will be read by Drs Leveuf and Perrot on tendon transplantations on the foot for infantile paralysis, and by Dr Allard of Berck on bilateral coxalgia. The third day will be spent at clinics in Parisian hospitals and on the day following the close of the congress the members will visit the various orthopedic institutions at Berck-Plage in the North of France, one of the largest centers for the treatment of tuberculous bone lesions in the world. Those wishing to attend this congress should write to Dr Andre Richard, 45 Avenue Paul Doumer, Paris (16) or Dr Louis Tavernier, 7 rue de Bonnel, Lyons, France.

Study of Action of Morphine on Kidney

In a graduation thesis by Claude Macrez, which appeared recently, the results are given of experiments which show that in large doses morphine checks diuresis and the selective action of the kidney on the blood, but that this action is only temporary and does not cause any changes in the renal parenchyma. Repeated subcutaneous daily injections over a period of several months of one-sixth grain (0.01 Gm) or more are not followed by any progressive increase in the blood urea content or by microscopic changes in the kidney. Hence morphine can be given without hesitation in heart disease, even if generalized edema or a high blood urea content exists.

Silver Nitrate Solution for Instillation in Eyes of New-Born

At a recent meeting of the Academie de medecine a report was submitted by a special committee, headed by Professor Tiffenau, which had been appointed to study a modification of the present 2 per cent silver nitrate solution, which obstetricians and midwives are obliged by law to use as a prophylactic against ophthalmia neonatorum. The committee in its report recommended a reduction to a 1 per cent solution, as the instillation of a 2 per cent solution, when more than one drop was used, had been followed by corneal ulcerations. With the weaker (1 per cent) solution, the use of from 2 to 4 drops was found to be perfectly safe. The report of the committee was adopted.

Course in Broncho-Esophagoscopy by Dr Chevalier Jackson

Dr Chevalier Jackson of Philadelphia has been invited by Dr J M Le Mee to give a course in broncho esophagoscopy at the Fanny Blumenthal Clinic in the Children's Hospital of Paris. The course will begin September 1 and end September 10. The number of participants is limited to twelve. The clinical lessons will be given in Dr Le Mee's service and work on the cadaver at one of the dissecting rooms of the medical school.

BERLIN

(From Our Regular Correspondent)

Aug 30, 1937

Report of Studies on Progressive Muscular Atrophy

The Italian clinician Professor Meldolesi of Rome recently reported to the Berlin Medical Society on his investigation of progressive muscular atrophy. His material comprised more than 100 cases and covers a period of nine years. Especially characteristic features of the clinical picture are the progressivity, a typical muscular deficiency which pervades all the musculature, even the apparently unaltered, characteristic disturbances of metabolism, a familial diathesis, and a disturbed digestion. The most frequently exercised muscles are the first to be affected, and if strenuous exertion has been customary the course of the disease will be particularly severe. The muscle substance becomes as pale as fish-flesh as a consequence of myoglobulin deficiency. The muscular metabolism is always disturbed in that, whereas much creatine is secreted, the elimination is reduced. This disorder, like the always demonstrable disturbances in sugar metabolism (reduction of the glycogen control of the musculature) results from disturbed myoglobulin metabolism. Myoglobulin is a catalyzer of carbon dioxide and the basis of the serum and hence inhibits acidosis of the working muscle which would otherwise ensue. The disappearance of myoglobulin produces all the other clinical signs of progressive muscular atrophy. Meldolesi was likewise able to detect in the healthy relatives of myopathic patients the presence of myoglobulin deficiency together with its sequels, such as the increased excretion of mesobilirubin, a decomposition product of myoglobulin, in the bile and in stools, creatinuria, and depletion of the glycogen reserves of the musculature. This myopathic diathesis was observed by Meldolesi in sixty families. Myoglobulin deficiency is a character transmitted from the accessory chromosome through the female sex. In all cases in which the myopathic diathesis led to disease, the pancreas was found to be much altered anatomically and functionally. External pancreatic secretion was always influenced and the ferment values, especially of trypsin, were notably reduced. The extent of this hypochylia paralleled the severity of the general disturbance. The anatomic substratum of this alteration was a pancreatic sclerosis. According to the metabolic tests undertaken by Meldolesi, the myopathic patient presents a state of deprivation in which the protein reserves are com-

pletely exhausted. In this state absorption fails in the myoglobin deficient muscle fibers, further damaged by exertion. If a person who presents the myopathic diathesis sustains a pancreatic injury, he will fall prey to progressive muscular atrophy. As a therapeutic measure Meldolesi administers large doses of pancreatic substance. According to his observations, within six months this treatment will reestablish the protein balance and arrest the progress of the disease. In severe cases, orthopedic operations can be of great benefit just as in poliomyelitis. For the improvement of muscular metabolism, Meldolesi administers intravenous injections of dextrose and insulin.

Influence of Depth and Type of Respiration on Basal Metabolism in Lungs

The influence of respiratory depth and type on the basal metabolism in the lungs is best viewed from the standpoint of energetics. In addition, the size of the dead space is an important consideration. The literature contains considerable divergence of opinion as to whether the effective dead space of the respiratory tract is greatly altered by the deepening of respiration. There are two opposing schools of thought. Haldane and his followers on the one hand assume that deepened respiration produces marked enlargement of the dead space, whereas Krogh and his associates found that increased depth of respiration effects a relatively low grade enlargement of the dead space. Recently F. Grosse-Brockhoff, assistant to Professor Rein in the Bonn medical clinic, carried on studies of the dead space at the physiologic institute of Gottingen University. He was aided in this investigation by Schoedel. Grosse-Brockhoff reported the following results before the Bonn Medical Society. It should be kept in mind that the proper withdrawal and measurement of the alveolar air is the predominant factor in determining the size of the dead space and also that in the method of obtaining this air lies the greatest possibility of error. The first experiments concerned estimates of the alveolar air based on the method of Benzinger and Bruch. The following data were elicited. As respiration is deepened the dead space undergoes a pronounced increase, for example, from 150 cc during a respiratory depth of 500 cc to 750 cc during a respiratory depth of 2,800 cc. These observations correspond throughout with those of Haldane, yet a previous theoretical evaluation of the fluctuation of the alveolar air in the expiratory phase rendered questionable the accuracy of the mentioned experimental results. It then became necessary to apply a method that would permit a series of any number of inspirations to be analyzed in particular phases. In this manner a true mean value of the "expiratory alveolar air" could be obtained. On the basis of this procedure the investigators reached the following conclusions. If a person is in repose and the respiration deepened, the dead space exhibits only a slight increase. And if the person is active the dead space will generally be even smaller than when the person is in repose. This phenomenon is to be explained by the fact that the size of the effective dead space is dependent on the type of respiration and on the velocity of the air current in the respiratory passages. Measured in terms of carbon dioxide, the dead spaces are usually smaller than if measured in terms of oxygen. This observation verifies the assumption that parts of the lungs can function as respiratory epithelium for easily diffused carbon dioxide, whereas the same areas play no part in the oxygen exchange. The variations in the alveolar air are also of interest on other grounds. It is clearly demonstrable that between depth of respiration, type of respiration and middle position of respiration on the one hand and the extent of alveolar air on the other there exist interrelations which under certain circumstances must also influence the variations of the oxygen saturation in the blood. It may also be expected that in short and rapid respiration with lowered middle position the oxygen saturation in the blood is subject to marked variations. In such pathologic states

oxygen therapy ought to exert a most favorable influence, as by its use the partial pressure necessary for saturation of the blood will remain adequate at the end of the expiratory phase.

Investigation of Bee Venom and Serpent Venom

Similarities between bee venom and serpent venom have already been time and again attested on a physiologic basis. Recently Drs. Tetsch and K. Wolff carried on experiments at the Pharmacologic Institute of Berlin University to establish chemically analogous substances within the two poisons. Both chemical and biologic procedures were followed. Bee venom can be kept in physiologic solution of sodium chloride for an indefinite period. Fairly important variations in toxicity based on the source of the poison and the season may be observed. The mean value of the minimal lethal dose is approximately 100 micrograms per gram of body weight of a mouse. Nonpoisonous fractions can be obtained from bee venom in an aqueous solution by extraction with ether and chloroform. Histamine is rendered precipitable by trimetaphenol and a powerful toxic substance is found in the precipitate. It is interesting to note that sulfur, too, is present in bee venom.

The venom of the rattlesnake *Crotalus terrificus* was then tested. Here extraction of the protein regularly leads to detoxication. Dialysis was ineffectual. On the basis of the analyses it can be concluded that bee venom, crotalin and cobra venom are all protein substances. Biologic tests of isolated intestines of guinea-pigs also evidence the similar composition of crotalin and bee venom. Both the natural poisons and the picrate fractions separated therefrom produce the same "tachyphylactic" effect in the intestine.

BUENOS AIRES

(From Our Regular Correspondent)

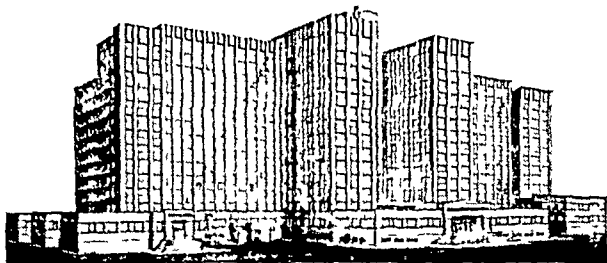
Sept. 1, 1937

American Trypanosomiasis

Dr. S. Mazza reported on studies made in the laboratories of the Mission de Estudios de Patologia regional of Buenos Aires University at Jujuy (*Prensa med. argent.* 24:1394 [July] 1937). In the last two years he observed 240 cases of acute forms of Chagas disease with a mortality of 58 per cent. Cases have been reported from the littoral, northern, central and western zones of the country, including regions with a temperate climate. Chagas' erroneous statement that trypanosomiasis produces goiter was a hindrance to the studies. Patients suffering from trypanosomiasis do not develop goiter if they live in nongoitrous zones of the country. In goitrous zones the patients suffering from goiter or from endemic cretinism do not develop trypanosomiasis. The presence of edema of the eyelids and sometimes general edema, adenopathies and hepatosplenomegaly are all signs of diagnostic value. Some children die with meningo-encephalitic symptoms. Mothers' milk may contain trypanosomes. The latter can be inoculated through the skin by scratching and also through the ocular conjunctiva. Scratching causes the infection by inoculating the feces of *Triatoma*. Mazza states that in all countries of South, Central and North America acute trypanosomiasis will be found, especially in children, if extensive researches are made. Dr. Dios and his collaborators reported results of studies on triatomas in Argentina which were carried on at the Instituto Bacteriologico of the National Department of Hygiene (*Folia biologica* 1937, Nos. 70-73). The researches were begun in 1915 by Maggio and Rosenbusch and have been carried on for twenty-two years. Examination of 30,865 insects showed that from 15 to 25 per cent of the insects are infected in the northern and central areas of the country, from 10 to 15 per cent in the western areas and 11 per cent in the Rio Negro toward the south, where it is cold. If Argentina, a large part of which enjoys a temperate climate, has so high an index of triatoma infestation, the index must be higher in the tropical regions of South, Central and North America.

Antituberculosis Center

The Argentine League Against Tuberculosis gave orders for the beginning of the construction of a large center for the study and treatment of tuberculosis. The building for the center is being constructed on a lot of 90,000 square meters given by the municipal authorities of the city to the league. The cost of the construction will be 5,500,000 Argentine pesos (about



Antituberculosis center under construction in Buenos Aires

\$2,750,000) Donations from the people of Argentina have amounted to \$300,000. The House of Deputies has already allowed \$1,500,000 and will give the remainder of the cost on completion of the building.

Institute of Surgery

The work on the construction of an institute for postgraduate medical and surgical studies at the ward of clinical surgery of Prof. M. Jorge at the Durand Hospital has been advanced, and an amount of \$1,500,000 is to be expended in the construction.

New Faculty of Medicine

The laying of the corner stone of the new faculty of medicine of Buenos Aires took place August 9. There will be two buildings, each having ten stories in the front and eighteen stories in the rear.

VIENNA

(From Our Regular Correspondent)

Aug. 8, 1937

The First International Short Wave Congress

Immediately following the second Congress of the Austrian Society of Roentgenology, July 12, the first International Short Wave Congress convened in Vienna. Four hundred members were present. The proceedings were conducted in three sections, on physics, medicine and biology, which met simultaneously. The administrative organization of the entire congress was entrusted to the Viennese docent Dr. Liebesny. As presidents of the sections were chosen Professor Dr. Arsonval of Paris, Senator Marconi of Rome, who has since died, and Professor Zeunek of Munich. The federal government of Austria and the municipal government of Vienna welcomed the assembled scientists in the usual ceremonious way. An extraordinary historical collection of all kinds of apparatus and machines in some way related to the production, utilization and investigation of short waves was on exhibit at the Viennese Technical Museum and aroused the interest of the delegates and the public as well.

Dr. Schliephake, a pioneer of short wave therapy, designated, as the main fields of short wave therapy, suppurative-inflammatory diseases of the skin, of the nasal sinuses and of the pleura and the lungs. Only moderate dosage is helpful, overdosage can be most harmful and underdosage is ineffectual. Professor Maragliano of Genoa recommends short wave therapy in joint diseases, both acute and chronic (arthritis deformans), especially in combination with roentgen therapy.

Professor Wintz of Erlangen has obtained favorable results from the use of short waves in acute gynecologic inflammations. He irradiates the patient with minute doses or else applies larger doses to the ovaries in order to reduce the function of those

organs. It was elicited in the discussion that mastitis likewise responds favorably to this therapy. Similar results have been reported in Germany, Denmark, Hungary and America. On the basis of the literature one may expect much from short wave therapy. It was repeatedly emphasized that only low intensity doses ought to be applied, especially in acute conditions, in order to maintain a so called athermic or minimal heating effect.

Professors Scheminzky of Vienna and Schliephake of Giessen and Dr. Patzold of Erlangen discussed the effect of short waves on living cells according as the tissue is exposed to the influence in the coil induction field, ray field or condenser field. Dr. Dalton of London was able to adduce proof of the specific thermal effects produced by short electric vibrations. Professor Jellinek of Vienna has found that the microscopically visible cellular alterations differ from those usually caused by electrical influences.

Dr. Liebesny provided a historical account of our knowledge of short waves. Fifty years ago, Hertz discovered the waves which have been named for him. Arsonval, Marconi and Zeunek developed Hertz's discovery. Subsequent development of the field was done largely by three Viennese scientists: von Lieben, who invented the cathode ray relay in 1905, and Eugen Reisz and Siegmund Strauss, who constructed the first electronic tubes in 1911. In 1924 the condenser field was first made use of by Schereschewski in Boston. In 1929 Schliephake first applied short waves for therapeutic purposes.

Other papers submitted to the medical section were concerned with the use of short waves in varied diseases. Acute infectious infantile paralysis has been treated by short waves by Colarizi of Rome. Whereas the Italian claims to have achieved favorable results, Wolf of New York, who conducted experiments with monkeys, has been less successful. Dr. Merdinger of Rumania believes that favorable results should be anticipated only if the treatment has been begun in the early stages of the disease. It is chiefly the Italians who have made use of short wave therapy in all conceivable conditions, including chronic appendicitis, and inflammation of the eye and skin.

Samuels of Amsterdam has favorably influenced disturbances of the endocrine system by means of short waves. Ruete of Marburg applies this therapy, to the exclusion of other measures, in suppurative processes of the skin. He has in particular been able to bring about remissions in the much dreaded furunculoses of the upper lip and nose. He also recommends this treatment in scleroderma.

Raab of Charlottenburg described experiments on the influence of short waves on the gonads and on fetal development. He found that short waves if not administered in excessive doses exercise no perceptible permanent influence on the developing embryo and that the aggregate of hereditary characters is in no way impaired. In plant embryos, however, Roth of Vienna observed a marked reaction to short waves, which was manifested in part by retardation, in part by acceleration of the period of germination.

Liebesny of Vienna stressed the need for the avoidance of heat effects in the application of short waves. Electric currents of all types possess a specific electrical effect on living tissue, which is independent of the thermal effects. The latter are above all to be avoided in the short wave treatment of inflammatory tuberculosis. Liebesny and Pace exhibited a film in which they demonstrated how powerful short wave dosage disturbs the normal arrangement of fluid atoms in milk, and liquid fat. Krasny-Ergen of Stockholm has undertaken similar investigations and is in accord with Liebesny. These two reports are of the greatest import with respect to the theoretical foundation for the practical claims of low intensity applications.

Krausz of Poland strongly recommended the use of short waves in trachoma and in suppurative injuries to the eyes and after ocular operations and infections.

Wolf of New York made some interesting observations on the effect exerted by short waves on the circulatory system whereas mild doses dilate the capillaries and thus cause the arteries to supply greater quantities of blood, large doses damage the capillaries and at the same time dilate the arteries, thus inducing consecutive hyperemias in the tissue under treatment. Weissenberg of Vienna has found also that resistance of the skin to electricity is increased by mild irradiation but reduced by larger dosage.

Lux of Vienna stated that he had observed that in the short wave therapy of furunculosis, certain furuncles become absorbed by the organism and this motivates the formation of antitoxins. In this way furunculoses of years' duration are frequently brought to speedy cure. On the basis of this observation Lux has treated more than 100 cases of chronic rheumatism which presented purulent foci in the region of the teeth (oral sepsis) by systematic dental irradiation with short waves. Lux believes that by this procedure antibodies against the toxins of rheumatism are formed and that this makes possible the preservation of the teeth.

Marriages

RODERIC ORLANDO JONES, Elyria, Ohio, to Miss Margaret Carolyn Moore, of Norfolk, Va, in Durham, N C, June 9

ELIJAH EUGENE MENEFEE JR, Lynchburg, Va, to Miss Eleanor Chittenden of Weldon, N C, June 5

CHARLES EDWIN MCNAMARA, Washington, D C, to Miss Virginia Adams of Lynchburg, Va, June 16

WILBUR CURTIS HUNSUCKER, Gibson, N C, to Miss Helen Marie McKown at Blackston, S C, July 5

ENMETT T ACKERMAN, Gays Mills, Wis, to Miss Georgia Florence Gilbert of Madison, September 1

WILLIAM G KRUCKENBERG, Lowden, Iowa, to Miss Lenore Clinch of Elgin, Ill, in Chicago, July 3

VESEY MARKLIN JOHNSON to Miss Lois Ruth McCortney, both of West Palm Beach, Fla, June 1

JOHN PAUL MCCLOSKEY, Johnstown, Pa, to Miss Pauline Isabel Fisher of South Fork, June 28

ANTHONY C MARGLIANO, Joliet, Ill, to Miss Marcella Marguerite Coyne, in Chicago, July 15

ROBERT J W KINZEL, Battle Creek, Mich, to Miss Marjory Jane Hall of Indianapolis, July 3

LAWRENCE J KEENAN, Fond du Lac, Wis, to Miss Helen Pfister of Sheboygan, August 7

DWIGHT C WIRTZ to Miss Dorothy Edwards, both of Des Moines, Iowa, September 4

EVERETT IRVING BUGG JR, to Miss Annie Laurie Newsom, both of Durham, N C, in June

ROBERT G DIESS, Sharpsburg, Pa, to Miss Cornelia A Chilcote of Pittsburgh, June 30

CHARLES HOUSTON GAY to Miss Mary Irvine Carter, both of Martinsburg, W Va, June 29

FORNEY L MURRAY, Bristow, Okla, to Miss Edith Caroline Larson at Joplin, Mo, in June

JAMES LLOYD MASSEY to Miss Mary McGeehee Wyatt, both of Birmingham, Ala, June 30

PAUL SHEETS PENTECOST, Liberty, Ind, to Miss Martha Shock of Richmond, June 26

CHARLES ZURAWSKI, Providence, R I, to Miss Irene Webber of Trenary, Mich, June 30

WILLIAM R ARTHUR, Hampton, Iowa, to Miss Julia M Edick of Eldora, July 22

PAUL THURLOW PETIT to Miss Mary Sue Stone, both of Charleston, S C, in July

CHARLES H BEHNKE, Oshkosh, Wis, to Miss Dorothy Panay of Milwaukee, August 9

MAURICE A MICHAEL to Miss Esther Simon Armon, both of Philadelphia, June 20

SAMUEL McLANAHAN, Baltimore, to Miss Evelyn Willoughby Sharp, July 2

URBAN J DURNER to Miss Alma Radtke, both of Milwaukee, July 29

SAMUEL MILLER, Akron, Ohio, to Miss Esther Holter, June 28

Deaths

Jacob Diner, New York, Fordham University School of Medicine, New York, 1913, member of the Medical Society of the State of New York, formerly dean of the College of Pharmacy of Fordham University, and professor of pharmacology, toxicology, materia medica and clinical diagnosis at his alma mater, at one time member of the Committee of Revision of the U S Pharmacopeia, on the medical advisory board during the World War, past president of the New York State Pharmaceutical Association and the New York Academy of Pharmacy, was attending clinical microscopist at the Fordham Hospital, visiting physician and consulting pathologist to the Knickerbocker Hospital, New York, consulting physician to St Mary's Hospital, Hoboken, N J, aged 66, died, July 25, in a sanitarium at Amityville, L I, of chronic endocarditis and cerebral hemorrhage.

James Alexander MacMillan, Detroit, University of Toronto Faculty of Medicine, Toronto, Ont, 1893, member of the Michigan State Medical Society, fellow of the American College of Surgeons, past president of the Wayne County Medical Society, emeritus professor of proctology at the Wayne University College of Medicine, formerly known as the Detroit College of Medicine and Surgery, surgeon to the Providence Hospital, consulting surgeon to the Eloise (Mich) Hospital and the Receiving Hospital, for many years division surgeon for the Pennsylvania Railroad, aged 73, died, July 5, at his summer home in Kingsville, Ont, Canada.

John Francis Dowling, Hartford, Conn, Long Island College Hospital, Brooklyn, 1890, member and formerly vice president of the Connecticut State Medical Society, past president of the Hartford County Medical Society, formerly member and president of the city board of health, president emeritus of the medical staff of St Francis Hospital, on the consulting staffs of the Hartford Hospital, Mount Sinai Hospital, Municipal Hospital and the Bristol (Conn) Hospital, aged 81, died, July 20, of arteriosclerosis, heart disease and shock due to a fall.

John Campbell Spencer, Palo Alto, Calif, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885, member of the California Medical Association and the American Urological Association, past president of the San Francisco County Medical Society, at one time associate professor of genito-urinary surgery at the University of California Medical School, San Francisco, formerly mayor of Palo Alto, served during the World War, aged 76, died, July 4.

Henry J Farbach of Louisville, Ky, Hospital College of Medicine, 1907, member of the American Urological Association, at one time professor of histology and bacteriology at the Louisville and Hospital Medical College, for many years on the staffs of the City Hospital and the Methodist Episcopal Deaconess Hospital, aged 56, died, July 6, in the Eitel Hospital, Minneapolis, of heart disease, while attending the meeting of the American Urological Association.

Guy Shearman Peterkin, Seattle, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895, member of the House of Delegates of the American Medical Association in 1909 and in 1915, member of the Washington State Medical Association, North Pacific Surgical Association, and the American Urological Association, fellow of the American College of Surgeons, aged 65, died, July 22, of a self-inflicted bullet wound.

Edward Milton Overton, Bay Shore, N Y, University and Bellevue Hospital Medical College, New York, 1915, fellow of the American College of Surgeons, attending surgeon to the Southside Hospital, Bayshore, consulting surgeon Mather Memorial Hospital, Port Jefferson, Brunswick General Hospital, Amityville, and Suffolk Sanatorium, Holtsville, aged 55, died, July 10, at Orlando, Fla, of coronary thrombosis.

Miner Raymond Kendall, Cleveland, Western Reserve University School of Medicine, Cleveland, 1914, member of the Ohio State Medical Association and the American Academy of Ophthalmology and Oto-Laryngology, otologist for the board of education, served during the World War, on the staff of the U S Marine Hospital, aged 49, died, July 13, in the Lakeside Hospital of cirrhosis of the liver.

William C Ford, Woodstock, Va, College of Physicians and Surgeons, Baltimore, 1896, member of the Medical Society of Virginia, past president of the Shenandoah County Medical Society, secretary of the county board of health, for many years county coroner, member of the county school board and town council, aged 71, died, July 8, of carcinoma of the stomach with metastases.

Hervey Williams Whitaker ☉ Columbus, Ohio, Starling Medical College, Columbus, 1881, formerly professor of rhinology and laryngology at his alma mater, served during the World War, at one time member of the board of trustees of the public library, for many years on the staff of the Children's Hospital, aged 79, died, July 12, of injuries received in a fall

Hugh Stanley Douglas, Toronto, Ont, Canada, University of Toronto Faculty of Medicine, 1923, member of the Associated Anesthetists of the United States and Canada, served during the World War, junior demonstrator in anesthetics at his alma mater, on the staffs of the Hospital for Sick Children and St Michael's Hospital, aged 41, died, July 10

Thomas Mulligan ☉ Grand Forks, N D, University of Toronto Faculty of Medicine, Toronto, Ont, Canada, 1904, past president of the North Dakota State Medical Association, fellow of the American College of Surgeons, member of the surgical staffs of the Grand Forks, Deaconess, and St Michael's hospitals, aged 60, died, July 19, of heart disease

Jamie William Dickie ☉ Southern Pines, N C, Jefferson Medical College of Philadelphia, 1918, formerly secretary of the Moore County Medical Society, served during the World War, fellow of the American College of Physicians, medical director and superintendent of the Pine-Crest Manor Sanatorium, aged 43, died, July 6, of pneumonia

Earl Vinton McComb ☉ Menominee Mich, Northwestern University Medical School, Chicago, 1907, past president and secretary of the Menominee County Medical Society, served during the World War, formerly city health officer, on the staff of St Joseph's Hospital, aged 53, died, July 6, of coronary thrombosis

Alva Archillous West ☉ Guthrie, Okla, Sioux City (Iowa) College of Medicine 1897, Northwestern University Medical School, Chicago, 1906, past president of the Logan County Medical Society, aged 64, on the staff of the Cimarron Valley Wesley Hospital, where he died, July 4, of cerebral hemorrhage

David W Gaddie, Hodgenville, Ky, University of Louisville Medical Department, 1884, member of the Kentucky State Medical Association, past president and secretary of the Larue County Medical Society, formerly county health officer, aged 75, died, July 12, of lymphatic leukemia

James Frank Smith, Leesville, La, Tulane University of Louisiana Medical Department, New Orleans, 1904, member of the Louisiana State Medical Society, past president of the Vernon Parish Medical Society, formerly parish coroner, aged 72, died, July 3, of carcinoma of the prostate

Ray Vaughan ☉ Cedar Mills, Ohio, Ohio Miami Medical College of the University of Cincinnati, 1913, past president of the Adams County Medical Society, aged 53, died, July 2, in the University Hospital, Columbus, of hypernephroma with metastases of the lungs

David Decker McNaughton, Argyle, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887, member of the Michigan State Medical Society, past president of the Sanilac County Medical Society, aged 71, died, July 6, of heart disease

Claude L Taylor ☉ Doylestown, Pa, Jefferson Medical College of Philadelphia, 1924, served during the World War, county medical examiner, aged 43, at one time assistant surgeon lieutenant, junior grade, U S Navy, was killed, July 11, in an airplane accident

Aileen Marjory Betteys Corbit, Oxford, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902, member of the Michigan State Medical Society, formerly village health officer, aged 59, died, July 12, of cerebral hemorrhage

William Cleveland Woodcock, Denver, Tulane University of Louisiana Medical Department, New Orleans, 1906, member of the Colorado State Medical Society, on the staff of the Denver General Hospital, aged 52, died, July 6, of pneumonia

William S Donnelly, Stillwater, N Y, Albany (N Y) Medical College, 1883, formerly chairman and member of the county board of supervisors, for many years health officer, aged 79, died, July 6, of chronic myocarditis and bronchopneumonia

Alfred Henry Stiebeling, Long Island City, N Y, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1883, aged 76, died, July 12, in the Grasslands Hospital, Valhalla, of an overdose of morphine

Edward Orestes Jenkins, Goodlettsville, Tenn, University of Nashville Medical Department, 1899, at one time state prison physician in Nashville, aged 60, died, July 7, in the Protestant Hospital, Nashville, of subdural hemorrhage

Fred Joseph Kraus, Chicago, Rush Medical College, Chicago, 1929, member of the Illinois State Medical Society, president of the staff of the Woodlawn Hospital, aged 37, died suddenly, July 11, of coronary thrombosis

George Wickliffe Webster, Providence, R I, Hahnemann Medical College and Hospital of Philadelphia, 1924, on the staff of the Homeopathic Hospital, aged 38, was shot and killed, July 16, by an unknown assassin

Hubert Felix Leach, Fort Worth, Texas, Fort Worth School of Medicine, 1899, for many years president of the board of trustees of the Weatherford (Texas) College, aged 61, died, July 4, of cerebral hemorrhage

Lanphear W Webb, Philadelphia, Hahnemann Medical College of Philadelphia, 1878, aged 70, died, July 12, in St Luke's and Children's Hospital, of injuries received in an automobile accident

Charles Riley, New Ross, Ind, Eclectic Medical Institute, Cincinnati, 1894, member of the Indiana State Medical Association, formerly county coroner, aged 70, died, July 12, of coronary occlusion

Charles Leone, Buffalo, University of Buffalo School of Medicine, 1911, member of the Medical Society of the State of New York, aged 52, died, July 4, of cerebral hemorrhage and hypertension

William Henry Seymour, Charles City, Iowa, Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1898, aged 71, died, July 4, in the Cedar Valley Hospital, of myocarditis

George Heywood Vernon, Beardstown, Ill, Hospital College of Medicine, Louisville, Ky, 1898, member of the Illinois State Medical Society, aged 62, died, July 6, of heart disease

Stephen Alvah Russell, Fairview, Mo, University of Tennessee Medical Department, Nashville, 1892, member of the Missouri State Medical Association, aged 67, died, July 2

James Timothy Marsden, Pueblo, Colo, University of the City of New York Medical Department, 1882, aged 82, died, July 6, in the Parkview Hospital, of pneumonia

Stanley F Wietrzynski, Chicago, Chicago College of Medicine and Surgery, 1914, served with the Polish Army during the World War, aged 46, was found dead, July 12

Woodman Robert Marriett, Capron, Ill, Rush Medical College, Chicago, 1886, aged 79, died, July 18, in the Municipal Hospital, Beloit, Wis, of prostatic hypertrophy

Lloyd Orrin Thompson, Greenwich, Conn, Dartmouth Medical School, Hanover, N H, 1893, aged 67, died, July 16, of chronic myocarditis and nephritis

Clifford Charles Porter, Greensburg, Pa, Jefferson Medical College of Philadelphia, 1888, aged 76, died, July 6, of erysipelas and pneumonia

Junius B Wright, Portland Ore, College of Physicians and Surgeons, Keokuk, Iowa, 1876, aged 102, died, June 20, of bronchitis and senility

George A Pruitt, Santa Cruz, Calif, Medical College of Ohio Cincinnati, 1877, aged 86, died, June 23, of heart disease and fracture of the hip

Samuel W Mims, Sylva, Ga, University of Georgia Medical Department, Augusta, 1878, aged 83, died, July 8, of coronary thrombosis

John Phillip Zieg, San Francisco, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1896, aged 64, died, June 3

Frank P Young, Los Angeles, Kentucky School of Medicine, Louisville, 1893, aged 67, died, June 11, of arteriosclerotic heart disease

Rita Ehrmann Dunlevy, New York, New York Medical College and Hospital for Women, 1888, aged 73, died, July 6

Arthur Valentine Brown, Kitchener, Ont, Canada, Trinity Medical College, Toronto, 1904, aged 56, died, June 21

William Merrick Carn, Bowman, S C, Medical College of South Carolina, Charleston 1887, aged 74, died, June 28

George Buchanan, Toronto, Ont, Canada, University of Toronto Faculty of Medicine, 1871, aged 94, died, June 14

Kilpatrick Cross, Jacksonville, Fla, University of Georgia Medical Department, Augusta, 1910, aged 60, died, July 4

Ora Harland Cumberworth, Granger, Ohio, Starling Medical College, Columbus, 1901, aged 61, died, July 4

John E Wilkinson, Ottumwa, Iowa (licensed in Iowa in 1886), aged 100, died, June 28, of senility

Louis Robert Eichberg ☉ New York, Chicago Medical College, 1890, aged 67, died, July 6

should go with the recommendation for the treatment. I have had one case and that is all I am going to have until or unless the efficacy of the treatment and its essential harmlessness are more firmly established. I hope that the unpleasant effects may be modified or eliminated.

W D LUDLUM, MD, Brooklyn

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CLIMATE IN ARTHRITIS

To the Editor—I have been confined to bed for the past nine months with osteo-arthritis of the spine. I have discontinued practice and sold my home with the idea of spending the summer in the north and then going to Florida to live in the fall. Is the climate of southern Florida suitable for a person who has arthritis or is the dampness injurious? My preference is for the west coast say at Fort Myers or Sarasota but I am told the humidity is marked, especially at night. Will you please advise me as to this?

E E EVANS MD Gary Ind

ANSWER—In general, patients with either atrophic (chronic infectious) arthritis or with hypertrophic (osteo-) arthritis feel better when they reside in a warm dry climate, hence Arizona and New Mexico are favorite states. Many arthritic patients have reported, however, that they were relieved of some of their symptoms by spending the winter in Florida or California, in spite of the humidity in these states. Unfortunately only a few formal studies have been made on the relationship of arthritic symptoms to the various climates in this country. The factor of barometric pressure is apparently more important to an arthritic patient than that of humidity, temperature or atmospheric electricity, according to Rentschler, Vanzant and Rowntree (*Arthritic Pain in Relation to Changes in Weather, THE JOURNAL*, June 15, 1929, p 1995), who studied the reactions of 367 patients with atrophic (not osteo-) arthritis to atmospheric and weather changes in Rochester, Minn., over the course of one year. Seventy-two per cent of the patients usually felt better when the barometer rose. However 21 per cent of the patients reacted in an opposite manner and had fewer symptoms when the barometer fell. In 7 per cent no relationship between symptoms and barometric changes was noted.

It was impossible to demonstrate any definite or consistent relationship between humidity and arthritic pains, and it was concluded that the factor of humidity alone was not important, although it may be important in conjunction with other factors. The same conclusion was reached regarding changes in temperature or in atmospheric electricity, between them and a patient's symptoms no general parallelisms were noted. Even those patients who were most consistently affected by weather changes did not react to them with complete uniformity. One "arthritic weather prophet," for example noted that changes in his symptoms paralleled changes in the curve of barometric pressure for about 77 per cent of the time that is, he felt better as the barometer rose, but for 20 per cent of the time the relationship was reversed and he felt worse when the barometer rose and better when it fell.

It would seem, therefore, that the advantages of a warm dry climate may be due not to a warm temperature or low humidity but to the evenness of the climate and temperature, and freedom from significant variations in barometric pressure. Regardless of humidity, therefore, states where climate is warm but where storms and changes in barometric pressure are frequent may be less suitable for the arthritic patient than states where the weather is colder but more "even." With these facts in mind, and realizing the variability and individuality of different arthritic patients to react to their environment, some arthritic patients may be distinctly pleased and note relief of symptoms in Florida in spite of the humidity and even in spite of storms and changes in barometric pressure. Others may feel no relief or may actually feel worse in spite of the warm temperatures.

It must not be forgotten that part of the relief which arthritic patients obtain during their visits to warm climates or to spas is undoubtedly due to the increased rest and relative freedom from worry and from traumatizing activity and to psychotherapy—"something is being done." Those who go to such places

and merely "lie in the sun" may be sadly disappointed, for a stay in a high dry climate may be advantageous in some cases, but not without the use of other forms of therapy. As one Tucson climatologist and student of rheumatism frankly stated "It must be understood that without the proper routine of living (a coordinated program of therapy) arthritis can continue as a sad and crippling disease even on the Arizona desert" (Holbrook W P. *Evaluation of Therapy in Chronic Atrophic Arthritis Ann Int Med* 7:457 [Oct.] 1933).

Incidentally, one point is not quite clear, why it is necessary for the patient with "osteo arthritis" of the spine to be confined to bed for nine months? Osteo arthritis (using the term not in the radiologic sense but in a clinical sense, a term synonymous with hypertrophic, degenerative or senescent arthritis) rarely if ever produces symptoms severe enough to confine a patient to bed for long periods. It may produce real pains or sciatica, but these symptoms are usually not severe enough to confine victims to bed for as long as nine months. Perhaps the patient is affected with the osteo-arthritic changes secondary to late or severe rheumatoid arthritis of the spine. A review of the diagnosis seems in order.

COBRA VENOM IN ARTHRITIS

To the Editor—Please give me information on the cobra venom treatment for arthritis? Where can I get it and is it of any real value?

E OSWALD VOYER MD Hollywood Calif

ANSWER—For a number of years various venoms, especially those of bees and snakes have been used in the treatment of a variety of diseases. Their virtues have been less impressive to physicians than to laymen, who have long favored ointments of snake oil and the stings of bees in the treatment of "rheumatism." Of commercial preparations of different venoms those of bees have been most widely used. Current sponsors of the use of bee venoms in the treatment of chronic arthritis and other rheumatic disorders are Beck, Mackenna and Baldermann.

In 1914 McCarty used crotalin snake venom in the treatment of several diseases including sciatica, no relief was obtained in the one case of sciatica so treated. Korbler reported an analgesic effect from the use of cobra toxin in one case of arthritis of a hip. Recently Macht commented on its analgesic effect in cases of tic douloureux, various neuralgias, chronic arthritis and other painful conditions not of malignant origin. According to Macht the analgesic action of cobra venom is much like that of morphine and other opium narcotics. A general discussion of the chemical constitution, physiologic effects and therapeutic application of snake venoms has been presented by Kellaway, by Kirschen and by Burkhardt.

It will be seen therefore that no extensive scientific study has been made concerning the value of cobra (or bee) toxins in chronic arthritis. Many believe that such relief as arthritic patients may obtain from bee or snake venoms is probably derived from a reaction somewhat similar to that from foreign proteins (milk, typhoid vaccine). The value of snake venom as a superior coagulant is more definitely established. Sterile solutions of snake venom (*Vipera russelli*) in dilutions of 1/10,000 or more are effective as local applications to stop bleeding in patients who have hemophilia with or without hemophilic arthritis. Others regard the venom of *Bothrops atrox* (fer-de-lance) cheaper, more available and more effective than Russell's viper venom.

The subject is discussed by the following authors:

- Beck B T. Bee Venom Therapy. Bee Venom Its Nature and Its Effect on Arthritic and Rheumatoid Conditions. New York and London: D Appleton Century Company Inc. 1935. Arthritic and Rheumatoid Ailments. Considerations and Inferences Derived from Their Treatments with Bee Venom. *J Med* 17:62 (April) 1936.
- Mackenna F S. Bee Venom in Rheumatic Disorders. *Lancet* 2:1212 (Nov 21) 1936.
- Baldermann G. Bienengift gegen Rheumatismus. *Med Klin* 32:1368 (Oct. 2) 1936.
- McCarty M T. Asthma, Sciatica and Hystero-Epilepsy Treated by a New Method with Case Reports. *Ann Med* 20:658 (Oct.) 1914.
- Korbler J. Schmerzlinderung bei Krebskranken durch Schlangengift. *Klin Wchenschr* 13:1185 (Aug.) 1934.
- Macht D I. Therapeutic Uses of Snake Venoms. *M Rec* 144:537 (Dec 16) 1936.
- Kellaway C H. Snake Venoms. I. Their Constitution and Therapeutic Applications. II. Their Peripheral Action. *Bull Johns Hopkins Hosp* 60:118 (Jan.) 1937.
- Kirschen M. Ueber das Kobratoxin und seine therapeutische Verwendung. *Klin Wchenschr* 49:648 (May 22) 1936.
- Burkhardt A. Die Behandlung der rheumatischen Erkrankungen mit Schlangengift. *Deutsche med Wchenschr* 61:1159 (July 19) 1935.
- McFarlane R G and Barnett Burgess. Hemostatic Possibilities of Snake Venom. *Lancet* 2:985 (Nov 3) 1934.
- McFarlane R G. Treatment of Hemophilic Hemorrhage. *St Bartholomews Hosp Rep* 68:229-254 1935.
- Barnett B B. Hemostatic Uses of Snake Venom. *Proc Roy Soc Med* 28:1469 (Sept.) 1935.
- Peck S M, Crummins M L and Erf L A. Coagulating Power of *Bothrops atrox* Venom on Hemophilic Blood. *Proc Soc Exper Biol & Med* 32:1525 (June) 1935.

CARBON TETRACHLORIDE POISONING

To the Editor—Can you supply me with any information on carbon tetrachloride gas poisoning, including symptoms and treatment?

EDGAR C SITES MD Port Huron Mich

ANSWER—Carbon tetrachloride may lead to at least three forms of poisoning for human beings (1) contact dermatitis, (2) asphyxiation, which is brought about only by gross exposures and resembles chloroform anesthesia, and (3) acute and subacute poisoning. As little as 100 parts of carbon tetrachloride vapors per million parts of air represents the threshold of beginning danger for those exposed. Davis has listed the following symptoms as characteristic of acute and subacute carbon tetrachloride poisoning: slight headache, nausea, nervousness, mental confusion, loss of weight, secondary anemia, slight jaundice, chronic spasms of the muscles, necrosis of the liver, acidosis, phosphaturia and irritative nephritis, loss of consciousness, coma, and in severe cases death, visual disturbances such as blurred vision, color confusion and disturbances of near vision.

The same author suggests the following with reference to treatment: removal from contact with the substance, aeration—fresh air, oxygenated if necessary, alkalization with sodium carbonate, calcium carbonate or intravenous calcium gluconate, ingestion of levulose, dextrose and animal fats, tincture of digitalis to protect the heart, hexylresorcinol for kidney irritation, intravenous administration of physiologic solution of sodium chloride and dextrose or Fischer's solution.

More extended information may be found in the following publications:

- Davis P A. Carbon Tetrachloride as an Industrial Hazard. *THE JOURNAL*, Sept 29 1934 p 962.
Smyth H F and Smyth H F Jr. Safe Practices in the Industrial Use of Carbon Tetrachloride. *THE JOURNAL*, Nov 21 1936 p 1683.
McGuire L W. Carbon Tetrachloride Poisoning. *THE JOURNAL*, Sept 17 1932 p 988.
MacMahon H E and Weiss Soma. Carbon Tetrachloride Poisoning with Microscopic Fat in the Pulmonary Artery. *Am J Path* 5: 623 (Nov) 1929.

MANTOUX TEST IN TUBERCULOSIS

To the Editor—I have been told that there have been recently some reports that the Mantoux skin test has activated tuberculous lesions in children under 8 years of age. It has been my impression from reading the available literature that the Mantoux skin test, especially given with the purified protein derivative tuberculin in graded dosage, was absolutely without danger to any individual. Will you please let me have the best opinion on this matter as it affects the skin testing program in the primary schools?

MD Ohio

ANSWER—Observations made on many thousands of tuberculin tests administered by the Mantoux method have proved beyond doubt that the present standard dosage is without harm for both children and adults. When Koch's old tuberculin is employed, the first dose consists of 0.01 mg. Large numbers of workers use as the initial dose 0.1 mg. with no evidence of reactivation of previously existing tuberculosis. If there is no reaction to either of these initial doses it is still entirely safe to administer a full milligram. In fact, some workers use a milligram as the initial and only dose in their testing program and report no ill effects. Purified protein derivative has been employed in a two dose test (the dosage differs from old tuberculin but the directions accompany each package) on large numbers of children and adults with no harm whatever. In fact, its safety was carefully accurately and definitely determined before it was placed on the market. Already Long has prepared an intermediate single dose test of purified protein derivative which is also harmless.

In 1935 more than 1,124,363 tuberculin tests were administered through tuberculosis associations. It is probable that an equal number or even more tests were administered in the offices of physicians. These figures indicate the extensive use of the test.

Statements to the effect that the test has activated tuberculous lesions in children under 8 years may have any one of several sources. There are still physicians who confuse the intracutaneous tuberculin test of Mantoux with the old subcutaneous test. In the latter, large doses of tuberculin were administered that were sometimes capable of reactivating lesions.

It seems more probable that the source of the statements is an organization in this country devoting its entire time and effort to opposition of good health measures such as vaccination against smallpox, immunization against diphtheria, and the tuberculin test. Members of this organization are misinformed or malicious in intent. They make numerous statements that are false such for example as that the milk of cows which have had the tuberculin test is very dangerous for infants. In an attempt to alarm the public they cite cases in a most indefinite manner of persons who have lost their arms because of positive tuberculin reactions, they state that many children have become tuberculous and have died as a result of the tuberculin test. When one attempts to locate the cases so reported,

they are never to be found and usually no one in the community or even the family knows of the source of the tale. These persons attempt to leave the public with the impression that tuberculin contains living tubercle bacilli, when in reality whether it is Koch's old tuberculin or purified protein derivative it contains no tubercle bacilli either alive or dead.

On occasions, these persons have been known to distribute at the doorsteps pamphlets containing their propaganda just before a tuberculin testing program is to be initiated. This attempt to destroy the testing program may meet with a considerable degree of success. It usually reduces the percentage of consents for tuberculin testing of both children and adults. While it appears successful temporarily, it also creates intense interest in the tuberculin test, so that actual facts may be presented to an alert public.

Probably one thing did more to hasten the tuberculin testing program among cattle than the demonstrations by the opposition in a few states such as Iowa. The "cow testing war" rated headlines in many of the large daily newspapers and most papers carried some items concerning it. The absurd propaganda was exposed and the public convinced that it was definitely detrimental. Therefore the propaganda that is being disseminated in the correspondent's community if traced, will probably hasten the day when the test will be universally accepted.

ALOPECIA TOTALIS

To the Editor—A white woman aged 28 gives the following history. At 2 years of age she severely burned her right arm with hot coffee. She remembers that at the age of 4 there was an alopecia totalis but cannot recall how long prior to that time it existed. She was treated the next three years without results. Her mother was then advised by an Indian woman to apply tincture of iodine to the scalp. This was done every other day blistering the skin severely. Finally (time unknown) coarse bristles appeared over the scalp and eventually the hair became long. There was an area about the temples extending over the occipital protuberance on which the hair never regrew. Approximately eight years ago the patient suffered what was diagnosed as a nervous breakdown brought on by overwork. Since this was associated with a marked loss of hair she was advised to cut off the remainder. During this period she was treated by a specialist for eight months and under his supervision hair once more appeared. She was told however that she could never hope to retain her hair unless treatment was continued without interruption. This treatment consisted of local applications applied by the patient and some form of internal medication. Owing to financial conditions she was unable to continue under this regimen. The alopecia areata had never entirely cleared up even under this therapy. About three and a half years ago the patient married and almost immediately the hair began to fall out rapidly. A year and a half later she became pregnant and during the second month of gestation the hair came in all over the scalp even over the former bald spots. These hairs were fine and silky and the growth was heavy and long. After the child became 3½ months old every hair on the body fell out during a period of two days. Prior to this time she had such a heavy growth of hair on her legs that she was embarrassed when appearing in public in a bathing suit. At the time stated however scalp hair, eyelashes, eyebrows, axillary, pubic and body hair disappeared entirely and the patient began to gain weight and once more became exceedingly nervous. There was a marked pitting edema of both lower extremities. The menses had not yet made their reappearance. The basal metabolic rate was low, the Kahn test was negative and the blood count presented no variation from the normal. She was given desiccated thyroid internally and a maintenance dose of approximately 5 grains (0.3 Gm.) daily was established. Under this therapy she lost about 20 pounds (9 kg.) the edema disappeared and the menses recurred with normal rhythm. She has continued along this line for the past year and a half. There has been no local treatment. She has developed a scanty growth of hair in the axillary and pubic regions and a very fine almost imperceptible downy growth on the scalp. The eyebrows and eyelashes which are sparse at first were colorless but now they are becoming pigmented. Can you give any information as to etiology, further therapy and prognosis?

MD Illinois

ANSWER—The exact causation of alopecia totalis is not known. There are three popular theories as to its origin—the neuropathic, the parasitic, and the toxic—one or more factors being involved in the individual patient. In the case cited there is a definite history of nervous shock preceding the alopecia in childhood as well as the attack at 20 years of age. The regrowth of hair during pregnancy has been reported by Meacham (*Brit J Dermat* 24:272, 1912). The postpartum recurrence of the alopecia probably is due to an endocrine dysfunction. Sabouraud (*Ann de dermat et syph* 4:140, 1913) believes that alopecia areata is connected with hyperthyroidism and ovarian disease.

In this case, treatment must consist of local and internal medication. The local treatment consists of repeated blisterings of the scalp, using stimulating preparations such as alcohol, ether, tincture of iodine, phenol, resorcinol, tar, sulfur, mercurials, croton oil, cantharidal collodion, or 30 per cent chrysarobin either singly or in combination. Phototherapy has been used with good results by Finsen. Jersild, Ormsby, Fox and others. Internally, preparations of iron, quinine, cod liver oil, phosphorus, arsenic or strychnine are indicated in the patient's

general health is below par. Pilocarpine nitrate, from one-eighth to one fourth grain (0.008 to 0.016 Gm.) daily or pilocarpine hydrochloride, one eighth grain hypodermically have been used with success. Thyroid medication has given good results at times. Certain pituitary preparations have been used with varying degrees of success.

The prognosis varies with the age of the patient and with the extent of baldness. Relapses are frequent, but in young persons complete recovery usually occurs except in the universal cases. Ormsby states that "there is hope even when the downiest and thinnest growth can be appreciated." In alopecias of long standing in which there is atrophy of the hair follicles, the baldness may be permanent.

COATED TONGUE

To the Editor—I have had several patients complain of 'coated tongue'. In these patients there was no marked dehydration or prostration. Some were troubled with constipation and others were not. In the majority of those who were troubled with constipation, purging and laxatives had no effect on the condition of the tongue. Will you make some remarks about this? What would be a good remedy in cases in which no cause can be found?
M D Alabama

ANSWER—The condition of the dorsum of the tongue can be described as normal, coated, smooth (marginal or general), scrotal (smooth or coated), geographic or diseased. The term "coated tongue" describes an abnormal presence of terminal cells on the filiform papillae. These cells are usually degenerating.

The normal appearing tongue varies somewhat with the individual, the abnormal is caused wholly or in part by such factors as trauma (dentures), trophic causes, local disease (fungi, tuberculosis, syphilis), nutritional deviations (food, vitamins, fluids), systemic disease, upper and lower respiratory infections, oral sepsis, excess smoking, and the condition of the intestinal tract.

A British expression says that "the tongue reflects the condition of the gut," an expression which is incompletely true. It has been found that the condition of the mucosa of the tongue varies directly with the quantity of free acid in the gastric contents. Heavily coated tongues are often associated with hyperchlorhydria or normochlorhydria, the partly smooth (marginal) or bald tongues with hypochlorhydria or achlorhydria. (A notable exception is the coated tongue often accompanying a gastric neoplasm and its achlorhydria.) It is possible that another modifying, intrinsic, factor may be associated with the degree of chlorhydria.

Treatment of a possible cause is to be preferred to the use of such superficial methods as oxidizing ablutions, brushing or scraping. It is suggested that every effort be made to rule out constitutional, regional or local disease as a cause of coated tongue. A regulation of personal habits may be of help, as well as a sustained regulation of every apparent disorder of the gastro intestinal tract. To accomplish this a satisfactory fluid intake and an adequate food and vitamin ingestion are necessary. The most important aid to the entire tract may be a functional regulation, especially of the frequently occurring spastic colitis, by such means as a bland diet, sedatives, emollients, relaxation, and a regulation of bowel habit.

EPIDURAL INJECTIONS FOR PRIAPISM

To the Editor—In the January 23 issue of THE JOURNAL on page 322 the use of epidural injections for priapism is advised. I will appreciate your giving to me the technic of the procedure or advising me where it can be found.
M D California

ANSWER—The technic of epidural injections for priapism is exactly that followed by Valentine and Townsend for frequency of urination (*M Rec* 64 486 [Sept 26]). In cases of priapism 60 cc of physiologic solution of sodium chloride is injected and at times procaine hydrochloride is added to the saline solution in the proportion of 10 cc of procaine to 80 cc of saline solution. Cases treated by this method are reported by Hühner in the *Medical Journal and Record* (132 521 [Dec 3] 1930) under the title of 'Some Unusual Cases of Priapism'.

The technic as described by Valentine and Townsend is briefly as follows: "The patient may be placed on either side most comfortably on a table sufficiently high to render excessive stooping of the operator unnecessary. The skin over the sacrum is thoroughly scrubbed with green soap and water, then wiped with sterile pledgets of alcohol but not dried. In order to find the point of puncture, the left palm is pressed upon the sterilized skin, with the fingers well extended and held closely together. They are passed down the skin over the sacral spinous processes until the last perceptible one of these is felt under the pulps of the left index and middle fingers. These are then slightly separated and pushed down-

ward until each of them presses an osseous tubercle. The skin is firmly stretched with the same fingers over these tubercles, between them is the space to be punctured. The needle is taken between the right thumb and middle finger, the tip of the index-finger resting upon the attachment of the needle. So held, at an angle of about 40 degrees to the sacral curve, it is thrust through the space of skin tensely stretched by the left fingers. An instant later the right fingers receive the sensation that is imparted when an instrument is tested by means of tense drumhead. This is produced by the needle's point traversing the posterior-inferior sacral obliterating membrane. The shaft of the needle is then depressed about 20 degrees and the left middle fingers raised from the skin, and the left index is pressed upon the point of puncture to steady the needle and the tissues. In this position the needle is cautiously pushed up into the sacral canal. If each step of the technic has been sedulously followed, and no gross abnormality exists, the needle can be entirely inserted without touching the periosteum of any part of the sacral canal. The injection is made as follows: The left thumb and index-finger then firmly hold the needle's attachment, while the syringe is attached by the right hand. Nine tenths of the contents of the syringe are then slowly injected into the sacral canal without moving the needle. Then still slowly injecting, the needle is gradually withdrawn until its point is just beneath the skin. The last drop or two of the solution are then forced out, forming a little bulla at the point of insertion. If these precautions are carefully observed there will not be even a slight oozing of blood from the puncture."

TREATMENT OF SYPHILIS IN PREGNANCY

To the Editor—In the past seven years I have been treating a woman for syphilis. She has remained Wassermann fast. Two years ago I told her to become pregnant continuing treatment until term. I delivered her of a normal boy. The placenta, cord blood and maternal blood at this time were negative. I gave her two courses of neosarsphenamine and a bismuth compound following delivery. I gave up treatment because it seemed to me that her health was becoming impaired as a result of so much medication. She remained Wassermann negative. Her baby now is 17 months old. March 2 a Wassermann test on her was doubtful. She wants to have another baby. In view of the condition of her veins I have decided to let her have her way and give her eight ampules of bismuth arsphenamine sulfonate during each of her trimesters. Am I doing the right thing even if the next Wassermann reaction is positive?
M D Michigan

ANSWER—It would seem that the correspondent is on safe ground to permit another pregnancy. Not only is antisyphilitic treatment during the pregnancy probably not necessary but from the implied large amount of treatment that the patient has received it would probably be unwise.

SENILE ARTERIOSCLEROSIS AND BRAIN DEGENERATION

To the Editor—A man aged 72 who has never been seriously ill and has never had any operations during the past five years has slowly been developing a very unstable equilibrium. When he attempts to sit in a chair he misses the seat and sits on the arm or on the floor. He falls frequently with no apparent cause. He never has lost consciousness or presented any signs or symptoms that would simulate a cerebral accident of any kind. His voice is getting huskier and he reacts very slowly to questions. Although he seems to understand all questions asked it takes as long as five or ten minutes before he answers them. He is well oriented as to time, place and person. At times he thinks his relatives are against him and so he hides his wallet or other possessions. He cries easily. When told not to do something he does it when no one is looking. He laughs at times for no apparent reason. Examination is essentially negative. The blood pressure is 150 systolic, 80 diastolic. The pulse rate is 84. The urine and blood count are normal. The eye grounds are normal. He has a very good appetite but is slowly losing weight and strength. I have diagnosed the case as a depressed type of manic depressive psychosis probably on an arteriosclerotic basis. The patient is taking solution of potassium arsenite beginning with 2 drops three times a day and slowly increasing to 12 drops. Is there any further medication that might be used and is solution of potassium arsenite contraindicated?
J T HATTENBACH M D Lakewood Ohio

ANSWER—Both the mental and the somatic symptoms in this case are probably due to senile arteriosclerosis and brain degeneration. The speech difficulty and tendency to unmotivated laughing and crying may be a feature of so called pseudobulbar palsy caused by sclerotic changes in the brain stem. If the patient has not had any previous attacks of depression or mania, it is highly improbable that he now has a depressed type of manic-depressive psychosis. It is probably only a beginning ordinary senile psychosis. Both depression and delusions are common features. Small doses of solution of potassium arsenite will probably do no harm. It is not likely that any drug treatment will be of any avail except for the relief of symptoms as they arise. Theoretically vasodilators

such as iodides in small doses, should be beneficial, but experience with such drugs in senile mental disease has been disappointing

POSSIBLE RELATIONSHIP BETWEEN USE OF METALLIC SUBSTANCES AND X RAY SKIN

To the Editor—I am anxious to find out if there is any literature substantiating what seems to be a general belief among doctors that the metal salts will sometimes break down tissue previously exposed to too big dose or repeated x ray exposure. To present the question more clearly, I give a brief synopsis. X ray exposure of the hand occurred in December 1917. A slight dermatitis followed which healed in two or three weeks. Nov 30, 1918, eleven months after exposure the tissue of the hand broke down and sloughed severely after the hands had been washed in mercury bichloride solution excessively four or five days previous to the breakdown. Please give me any references that support the contention that mercury bichloride caused the sloughing.

M D Oklahoma

ANSWER—So-called x-ray skin often has a low toleration for insult or injury. Minor injuries may result in indolent ulcers. The application of any one of many chemicals in a strength sufficient to be an irritant may cause ulceration. This is more likely to occur when the application is in the form of an ointment. A strong solution of mercury bichloride might cause ulceration of such skin, simply because of the irritation and not because of any specific action of mercury. Excessive scrubbing with soap and water even might cause ulceration in some cases. The only literature on this subject with which we are familiar is contained in the standard textbooks, such as G M MacKee's X-Rays and Radium in the Treatment of Diseases of the Skin, G C Andrews' Diseases of the Skin, Otto Glasser's The Science of Radiology and Caldwell and Russ's X-Ray and Radium Injuries.

DETERMINATION OF STATUS OF SYPHILIS IN PATIENT

To the Editor—A man aged 26 would like to marry. After three years of uninterrupted treatment the Wassermann and Kahn reactions remain positive. His first Kahn test was found positive after a very thorough examination in which no physical defects of note were disclosed. At the hands of several physicians he has been given neosphenamine bismuth, arsphenamine sulfonate mapbarsen, yellow mercurous iodide, mercuric salicylate, mercury by inunction, potassium iodide by mouth, potassium bismuth tartrate, iodobismutol and hyperpyrexia treatments (five hours of 106.5 F body temperature repeated three times). At present he is having a rest period for the first time. The spinal fluid has never been tested. Will you kindly advise the course to be taken with this man? Should marriage be permitted?

M D Alabama

ANSWER—The patient has apparently been treated vigorously because of the persistently positive flocculation tests, but the data presented would indicate that no effort has been made to determine why the tests have remained positive. In other words, before endeavoring to determine the significance of the persistently positive blood tests it is necessary to determine the status of the syphilis. The spinal fluid should be examined by all means and a clinical search should be made for evidence of cardiovascular syphilis or signs of other visceral or mucous membrane syphilis. If the inquiry had included information as to the number of injections and the amounts of the various remedies given to this patient suggestions could be offered for the subsequent treatment. The patient should not marry until the status of the syphilis is determined by examination of the spinal fluid and the viscera.

DETERMINATION OF BLOOD CHEMISTRY

To the Editor—Kindly advise me as to what would be a low priced, fairly accurate apparatus for the determination of blood nonprotein nitrogen.

Roy G S DOUGALL M D Cobleskill N Y

ANSWER—There is no simple yet entirely satisfactory method of determining the different constituents of the blood. If any considerable amount of this work is to be done it would be advisable to follow the procedure that may be found in any good work on physiologic chemistry. Practical Physiological Chemistry by Hawk and Bergeim and Practical Physiological Chemistry by S W Cole contain clear descriptions of the methods. The equipment is not particularly expensive but the method is rather time consuming and requires a fair amount of chemical technique and a space that may be devoted to laboratory purposes.

Fairly accurate substitutes are offered in the form of fixed color standards with the appropriate equipment for preparing the blood supplied in convenient form. There are several such devices. The LaMotte apparatus made in this country and devices The Helige apparatus, made in Germany, seem to enjoy popularity. Any reliable scientific instrument dealer can supply prices and information concerning these devices.

GONADOTROPIC PRODUCTS

To the Editor—I have been treating cases of undescended testes with follutein at a cost of \$3 for each thousand rat units. Recently I have learned that antophysin, another anterior pituitary like product is obtainable at \$2 for a similar amount and 5 000 units of A P L (Ayerst McKenna and Harrison) may be obtained for \$6. As treatment for this condition is prolonged such a variance in price becomes a matter of importance. Will you kindly answer these questions: 1 Are antophysin follutein and A P L of equal potency and unit value? 2 Which are Council accepted? 3 Why such a marked difference in price?

M D New York

ANSWER—1 There are no known actual comparative assays of antophysin, antuitrin-S, follutein and A P L. So far as available data are concerned they are probably nearly equivalent, rat unit for rat unit, and the cheapest may be chosen.

2 None are as yet Council accepted but all are now under consideration.

3 All the products except A P L are licensed under a patent held by the manufacturers of antophysin. This probably accounts for the differences in price.

PURPURA IN PREGNANCY

To the Editor—Would chronic purpura haemorrhagica be an indication for the interruption of pregnancy? If so, what would be the best method for intervention? The patient who is 25, had a severe postpartum hemorrhage following spontaneous delivery of a living full term child fourteen months ago. This necessitated packing of the uterus, repeated transfusions and subcutaneous injections of snake venom. She was dangerously ill for a month. Would intervention now or labor be more dangerous from the standpoint of the mother's life? If pregnancy should be allowed to continue to term, what antepartum and postpartum precautions would you advise? Is subsequent sterilization of the patient indicated and if so what would be the best method?

M D New Jersey

ANSWER—Purpura haemorrhagica is always a treacherous condition when complicated by pregnancy. If the patient is in her first trimester the immediate interruption of pregnancy combined with sterilization will probably offer the best prognosis. This procedure should be carried out by abdominal hysterotomy in order that the sterilization may be performed at the same time. After midpregnancy the patient should be allowed to continue to term. A normal delivery can be awaited but in the event that conditions are ideal an elective low or cervical cesarean section and sterilization can be carried out under local anesthesia. Should normal delivery occur, sterilization can be carried out at a later date by laparotomy. A most important part of the treatment is that the patient receive a minimum of 500 cc of whole blood about twelve hours prior to an operative procedure. Should the patient go into labor, transfusion should be performed immediately. Preparations should be made for the treatment of postpartum hemorrhage in the event that normal delivery occurs.

PSEUDOICTERUS NOT DUE TO HENNA POISONING

To the Editor—I should like to obtain information on the subject of henna poisoning. I have under my care a woman of 34 whose chief complaint is excessive sweating. Among other pathologic conditions she presents yellow sclerae. The blood serum is intensely yellow, the icteric index by the acetone method is 20. The pigment is not bilirubin or carotene. There is no history of dimetrophenol ingestion. The patient has red hair and has used henna rinses for several years. A consultant has suggested the possibility of henna poisoning.

M D, New York

ANSWER—Henna is considered perfectly harmless. Should the hair dyeing have anything to do with the condition reported it would have to be due to some added chemical. Trinitrophenol (picric acid) is one substance that might be suspected as being the cause of the pseudo-icterus. If this is present in the system in considerable quantity, it can be detected in the urine in the form of picramic acid.

IRON AMMONIUM CITRATE IN ANEMIA

To the Editor—I would greatly appreciate any information you may give me regarding the use of iron ammonium citrate for the newborn anemic infant. I should like to know the correct dosage. Please omit name.

M D California

ANSWER—The following schedule of dosage of iron and ammonium citrate may be stated for infants and children:

Age 6 months	weight 15 pounds	0.10 Gm
Age 18 months,	weight 25 pounds	0.20 Gm
Age 3 years		0.30 Gm
Age 5 years		0.50 Gm

Even larger doses may be given in accordance with the modern tendency for large and liberal doses of iron medication.

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SPECIAL BOARDS

Examinations of Special Boards were published in THE JOURNAL, September 25 page 1066

West Virginia July Report

Dr Arthur E McClue, secretary, West Virginia Public Health Council, reports the oral and written examination held at Fairmont, July 12-14, 1937. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Thirty-six candidates were examined, 35 of whom passed and one failed. Twenty physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1934) 87 8	(1935)	85 6
Howard University College of Medicine	(1930)		80 3
Northwestern University Medical School	(1937) 84 1		88 5
Rush Medical College	(1936) 89 (1937) 86 5	87 1 87 8	88 9
University of Louisville School of Medicine	(1935)		86 4
(1936) 86 9, 86 9			
Tulane University of Louisiana School of Medicine	(1936)		87 8
University of Maryland School of Medicine and College of Physicians and Surgeons	(1935) 86 9	(1936) 85 1	89 4
Ohio State University College of Medicine	(1935) 82 1	(1936)	86 3
Jefferson Medical College of Philadelphia	(1935)		86 5,
86 9 90 3 (1936) 89 2			
University of Pittsburgh School of Medicine	(1933)		89 7,
(1936) 86 7			
University of Tennessee College of Medicine	(1936)		84 7
Medical College of Virginia	(1936)		85 4
87 2 87 4 87 6 88 7 (1937) 86 4			
University of Virginia Department of Medicine	(1934)		88 3
(1936) 87 1 87 2			
School	FAILED	Year Grad	Per Cent
Meharry Medical College	(1932)		71
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Medical Evangelists	(1934)		Penna
Rush Medical College	(1896) Illinois	(1933)	Alabama
University of Louisville School of Medicine	(1931)	(1934)	Kentucky
Louisiana State University Medical Center	(1935)	(1935)	Louisiana
Tulane University of Louisiana School of Medicine	(1926)	(1926)	Louisiana
Johns Hopkins University School of Medicine	(1934)	(1934)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1926)	(1935) 2	Maryland
St Louis University School of Medicine	(1926)		Ohio
Starling Ohio Medical College	(1914)		Ohio
Western Reserve University School of Medicine	(1936)		Ohio
University of Pennsylvania School of Medicine	(1930)		Penna
Vanderbilt University School of Medicine	(1934)	(1936)	Tennessee
Medical College of Virginia	(1908)	(1908)	Virginia
University of Virginia Department of Medicine	(1935)	(1935)	Virginia
Marquette University School of Medicine	(1936)	(1936)	Wisconsin
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Duke University School of Medicine	(1933) N B M E		

South Carolina June Report

Dr A Earle Boozer, secretary, State Board of Medical Examiners of South Carolina, reports the written examination held at Columbia, June 22-24, 1937. The examination covered 17 subjects and included 70 questions. An average of 75 per cent was required to pass. Forty-three candidates were examined, 42 of whom passed and one failed. Eleven physicians were licensed by reciprocity and three physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Indiana University School of Medicine	(1936)		79 4
Medical College of the State of South Carolina	(1937)		76 9
77 1 77 6 77 8 77 8 78 78 4 78 5 78 9 79 79 8			
80 1 80 3 80 3 80 5 80 6 80 8 81 3 81 5 81 5			
81 6 81 6 82 9 83 3 83 3 83 5, 83 5 84 5 85 3			
85 5 85 8 85 8 86 87 1 87 3 88 1 88 1 88 3 88 9			
89 8 90 3			
School	FAILED	Year Grad	Per Cent
Medical College of the State of South Carolina	(1937)		73 5
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Emory University School of Medicine	(1936)		Georgia
University of Georgia Medical Department	(1926)		Georgia
University of Georgia School of Medicine	(1934) 2		Georgia
Tulane University of Louisiana School of Medicine	(1936)		Louisiana
Johns Hopkins University School of Medicine	(1933)		N Carolina
University of Maryland School of Medicine	(1906)		Maryland
University of Nebraska College of Medicine	(1934)		Georgia
University of Tennessee College of Medicine	(1936)		Tennessee
Vanderbilt University School of Medicine	(1935)		Tennessee
Medical College of Virginia	(1931)		Virginia
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Duke University School of Medicine	(1932)	(1935) N B M E	
University of Pennsylvania School of Medicine	(1934) N B M E		

Book Notices

Pediatric Dietetics By N Thomas Saxl MD FACP FAAP Associate and Lecturer in Diseases of Children New York Post Graduate Medical School Columbia University Foreword by Adolph G DeSanctis MD FAAP Director of Pediatrics at the New York Post Graduate Medical School and Hospital Columbia University New York Cloth Price \$7 Pp 565 with 59 illustrations Philadelphia Lea & Febiger 1937

While much has been written on infant feeding in concise handbooks and as a part of general textbooks on pediatrics, few books have presented the subject of pediatric dietetics separately in one volume. This book presents that material in a lucid and modern fashion. The volume is organized along three major divisions. In the first part of the book the author epitomizes the mechanics and chemistry of digestion during infancy and childhood, the various forms and types of food, their distribution, qualitative and quantitative compositions and how they are employed in the dietetic management of the infant and child. The roles of vitamins and minerals in metabolism are also concisely summarized. The second part of the book is concerned with infant feeding, both maternal and artificial. The third section considers the diet of infants and children in various diseases. Many specialists in their respective fields have collaborated with the author in this section. Finally, the appendix contains height and weight tables, recipes, general dietary suggestions, classified food tables, mineral and vitamin tables and a well selected bibliography to complement each section of the text. The book is well organized and carefully edited, and it is a storehouse of dietetic data useful in the everyday practice of pediatrics. The author has courageously considered the accepted proprietary foods in his discussion without bias. This has added to the value of his book. Certain special topics are not in keeping with the high quality of the rest of the book. The author should give this phase of his text more critical editing when the book is revised. In its present form, any physician will find this volume a useful addition to his medical library. It is comprehensive in scope, practical in its presentation and clearly and concisely stated. It reflects a sincere desire of the author and his collaborators to present the practicing physician with a useful source of data by which he may successfully meet the nutritional needs of the infant and child in health and in disease.

Maladies Infectieuses (deuxième série) Leçons cliniques professées à l'Hôpital Claude Bernard Par A Lemerle professeur à la Faculté de médecine de Paris Paper Price 55 francs Pp 309 with 15 illustrations Paris Masson & Cie 1937

This book contains seventeen clinical lectures based on cases illustrating various forms of infection. There are detailed, well planned lectures on cases of septicemia caused by the Pfeiffer bacillus, *B. proteus*, *B. perfringens* and *B. funduliformis*, on different kinds of ulceronecrotic pharyngostomatitis, on kala-azar, on malaria in Paris, on Hodgkin's disease with the undulant type of fever, and on other infectious manifestations. This is the second book by the author of clinical lectures on infectious diseases.

Common Skin Diseases By A C Roxburgh MA MD BCh Physician in Charge of the Skin Department and Lecturer on Diseases of the Skin St Bartholomew's Hospital London Fourth edition Cloth Price 15s Pp 401 with 173 illustrations London H K Lewis & Co Ltd 1937

This edition is characterized by numerous and excellent illustrations, an index of preliminary diagnoses grouped according to the essential lesions, suggestions for treatment in crystallized form which are proved and practical, and short, concrete, classic descriptions of the various diseases, all of which make for a vivid and noteworthy contribution to the General Practice Series. The book has been written for the general practitioner and the medical student, and the absence of numerous references and the inclusion of concrete suggestions for treatment should insure its popularity. Particularly worthy of favorable comment is the author's avoidance of lengthy discussions of the treatment of those dermatoses for which dermatologists have little to offer. The book is highly recommended to the medical student and the general practitioner, for whom it was written. Many dermatologists would do well to have it at hand for ready reference.

Lehrbuch der Nervenkrankheiten in 30 Vorlesungen Von Robert Bin-
ordentlicher Professor an der Universität Basel Fifth edition Paper
Price 25 marks Pp 618 with 207 illustrations Berlin & Vienna
Urban & Schwarzenberg 1937

The author continues the custom employed in his previous editions of presenting the subject matter in a series of thirty "lectures." The material is divided as follows: three chapters on diseases of the peripheral nerves, two on the dyskinesias, three on muscular dystrophies and atrophies, one each on multiple sclerosis and on diffuse diseases of the spinal cord, four chapters on syphilis of the central nervous system, one each on arteriosclerosis of the nervous system, on encephalomalacia and on aphasia, one chapter (of only thirty five pages) on tumors, inflammation and circulatory disturbances of the brain and the meninges, one on diseases of the cerebellum, two on congenital nervous diseases, two on "dysglandular syndromes," one chapter each on diseases of the vegetative nervous system and on epilepsy, three on the psychoneuroses, and one on the cephalalgias. Despite a certain prolixity of style, the author's presentation is generally clear and readable. Most of the data are competently handled, the chapters on diseases of the peripheral nerves, on the neuromuscular disorders and on aphasia are admirable. This edition, however, continues the two main defects of the previous ones: a dogmatic, oversimplified nosology and rather cursory and oftentimes incomplete sections on therapy. For example, the classification of brain tumors is didactically disposed of in two pages, whereas in discussing the treatment of dementia paralytica the author recommends fever therapy and mercury rubs but fails to mention either bismuth compounds or trypanamide. Perhaps the weakest portion of the work is that on the psychoneuroses, in which the author follows the classifications and the treatment of the preanalytic schools and excludes Freud, Jung and Adler even from the bibliography. In other respects the work is a fairly complete summary of the continental views on neurology and as such may be of interest to specialists in the field.

Baby Epicure Appetizing Dishes for Children and Invalids By Elena Gildersleeve Cloth Price \$1.75 Pp 141 New York E P Dutton & Co Inc 1937

The modern tendency in the feeding of infants and children is to broaden the diet to include a greater variety of foods. Nevertheless there seem to be more and more children who have to be made to eat. The cause may lie in failure to make the foods attractive. In this book, many dishes have been suggested that will do for the entire family and, particularly, will provide the child with a varied and wholesome diet. Dishes that call for the use of excessive amounts of sugar, starches, cream and butter have been omitted. Mothers and nurses who use the book will find it helpful in making meals attractive and aid in combating the problem of poor appetite in a child.

Hearing and Speech in Deaf Children By Phyllis M T Kerridge Medical Research Council Special Report Series No 221 Reports of the Hearing Committee V Paper Price 2s Pp 137 with 76 illustrations London His Majesty's Stationery Office 1937

It is estimated that there are about 40,000 persons deaf since infancy in Great Britain. Nearly 4,000 children of school age in England are deaf enough to require education in special schools. Of these, 500 in the schools of London were the object of the study the results of which constitute this report. The report shows that nearly one half of these children were born deaf, others became deaf on account of diseases that might be preventable. The majority of the children investigated were afflicted with a hearing defect before the age of 2 years. All gave evidence of some degree of mutism. Because of the extreme youth of those examined, the author overcame many obstacles in attempting to obtain an accurate estimate of the hearing loss presented by the children. There were experimental studies made with amplified sound which demonstrated not so much an improved faculty for hearing, as it resulted in improvement in speech of these afflicted children. Hence the use of amplified sounds is recommended to improve speech among such patients.

The reports will interest otologists because of the comparisons made of the results of hearing tests, new and old. The data on which determinations are based as to probable benefit of employing hearing aids for severely deafened children are

presented Those interested in pathology will find interesting clinical histories correlated with physical data For teachers of the deaf, the detailed reports of progress of a special group of forty eight children whose education was enhanced through the use of an electrical magnification sound apparatus will be interesting and suggestive The educational administrator will here find help in making estimates of the number of sound magnification instruments needed by schools for the deafened, if such afflicted children are to have the benefit of modern scientific advances Finally, even for the designer and manufacturer of hearing aids there are valuable data in the diagrams which indicate the severity and diversity of the physical characteristics of the ear

Psychiatric Social Service in a Children's Hospital Two Years of Service in Bobs Roberts Memorial Hospital for Children University of Chicago Clinics By Ruth M Cartland Assistant Professor School of Applied Social Sciences Western Reserve University Cloth Price \$1.25 Pp 105 Chicago University of Chicago Press 1937

This monograph records the experience of the Child Guidance Clinic of the Bobs Roberts Memorial Hospital of the University of Chicago Clinics The practical experiments described followed the recognition of the necessity for combined psychologic and pediatric knowledge and skill in the furtherance, growth and development of the child In the beginning an effort was made to have all patients referred to the psychiatric social worker, who could later arrange for the services of a psychologist and psychiatrist A few patients were referred directly from the outpatient clinic to the psychiatrist by physicians Service was established primarily to meet the needs of the pediatrician in the children's hospital Patients referred to it had been admitted either to the hospital or to its outpatient department The staff comprised a psychiatrist giving half time a psychologist giving half time and a psychiatric social worker giving half time, assisted by students in psychiatric social work

The purpose of the study was to determine the value of psychiatric social service in a children's hospital The children ranged in age up to 14 years The symptoms noted by the referring physician and thought by him to constitute reason for referring the child to the psychiatric service included habit disturbances, such as feeding, speech, enuresis, masturbation, night terrors, soiling constipation, thumb sucking, and nail and hand biting, introjective behavior such as restlessness, fears, timidity, seclusiveness, crying, day dreams, depression, apathy and slowness, illnesses unexplained by physical examination, and projective behavior such as school failure, mental retardation and overprotection by the mother The intelligence quotients by years and by sex indicate that the largest percentage of referred patients were in the range of average to dull The total number of treatment contacts over a two year period was 1,527, of which 926 were with parents and 601 with patients As told to pediatricians, parents brought children to the clinic because of physical symptoms only, physical symptoms associated with behavior, behavior only, school difficulties only, or speech defects Diagnosis consisted of a complete study of the child, physical, intellectual and social-emotional factors being coordinated Consultation service consisted of one or several interviews with the child, parent or agency social worker with a particular situation that did not seem to need full study Treatment consisted of continued work in the interest of the patient after physical, social, psychologic and psychiatric understanding revealed a capacity on the part of the patient or parent or both to utilize treatment

The author holds that a children's hospital seems to be a strategic place in which to render such service The records of the School of Social Service Administration are now being used for teaching and research It is implied that a psychiatric social service should be developed in many communities, but nothing is said about the cost of establishing and maintaining such a service Social service and the social worker are given prominent places throughout the report It is stated that 'social service and cooperation in any community are so dependent on the social self consciousness' of that community upon its attitudes that it is impossible to separate the two in our thinking"

Although this experience records some interesting observations, the results cannot be considered final or conclusive when based on such a small number of cases over a relatively short time

Ergebnisse und Fortschritte der Antimontherapie Von Prof Dr Phil Nat Hans Schmidt und Dr Med F M Peter Paper Price 15 50 marks Pp 218 with 8 illustrations Leipzig Georg Thieme 1937

This book aims to acquaint the reader with the achievements and the literature of the newer antimony therapy The main body of the book is taken up with abstracts of the enormously voluminous literature, arranged in as nearly logical clinical form as possible In this manner the authors "permit the reader to formulate his own conclusions," which it may be difficult for him to do in a number of instances on account of the reporting of directly opposite results It is obvious that antimony and potassium tartrate and the corresponding sodium salt have been superseded by organic compounds, among which experience has demonstrated a definite divergence of effects Thus the pentavalent antimony preparations are more effective in the treatment of kala-azar, while the trivalent are superior in the treatment of bilharziasis In helminthiasis and venereal lymphogranuloma the trivalent antimony is likewise the more efficient This determination is of great importance because with further development of these two classes of antimony derivatives the therapeutic effect becomes still further specialized Thus in the pentavalent neostibosan a specific against kala-azar has been developed, but the trypanocidal and spirocheticidal action that stibosan has is lost Among the trivalent antimonials the authors consider fuaadin to have achieved possibly the highest degree of specificity in its field As with arsenic, one has to distinguish between a "direct action" of the compound, such as is most especially responsible for anthelmintic action, from the "indirect action", i e, an effect on the system by which this is rendered capable of destroying the cause of the disease, when neither drug alone or the system alone could effect the cure Such action occurs in case of antimonial compounds in connection with the virus and bacterial diseases The newer antimonials must all be given parenterally, although with some of them intramuscular and subcutaneous administration is admissible The authors consider it remarkable that such a large number of diseases can be influenced by antimony, diseases the causes of which belong to such different groups of organisms as worms and protozoa, bacteria and filtrable viruses As a summary of what has thus far been done in this field and as an earnest as to what may be further accomplished, this book has an important place

La thyroïdectomie totale dans le traitement de l'insuffisance cardiaque et de l'angine de poitrine Par le Dr E Garcia Carrillo de la Faculté de médecine de Paris Paper Pp 159 Paris Maurice Lavigne Imprimeur 1937

This monograph contains a complete summary of the recent work done on total thyroidectomy in heart disease No new material is presented, but the author has given an excellent presentation of the development of this new surgical procedure of American origin To the reader in this country the book is superfluous, since the subject has been summarized many times in the various communications of Blumgart, Levine and others The appearance of the monograph at this time illustrates the lag in enthusiasm for new procedures in different countries In this country the operation is on the wane, but apparently in France the peak has not yet been reached

A Textbook of Embryology By Harvey Ernest Jordan A M Ph D Professor of Histology and Embryology University of Virginia and James Ernest Kindred M A Ph D Associate Professor of Histology and Embryology University of Virginia Third edition Cloth Price \$6 50 Pp 613 with 505 illustrations New York & London D Appleton-Century Company Incorporated 1937

The original plan of this volume, as stated by its authors, has not been changed since the first edition was published in 1926 In addition to the correction of errors present in the second edition, additions have been made under the topics of hematopoiesis, lymphatics, lung, sex determination, and anomalies These additions, however, are not at all extensive Comparison of the third with the first edition reveals the fact that surprisingly little new material has been added in the last eleven years This is the most serious criticism that can be directed against the latest edition of this book considering the advances that have been made in this field during the time Space for important new advances in embryology could perhaps have been made by the elimination of material of ques-

tionable value to the medical student or material more adequately dealt with in textbooks of other fields, for example, the chapter on eugenics. The brief discussions of anomalies appended to many of the chapters are a valuable feature of this work, although occasionally their interpretation might be questioned. For example, the consideration of hypernephroma as accessory suprarenal tissue invading the kidney is disputed by most pathologists and perhaps should not be included as an anomaly at all. The illustrations in the third edition are essentially unchanged since the first edition, they are numerous and generally clear but not otherwise noteworthy. This volume is a useful textbook for medical students and is more complete than most books of its kind in its field, but it falls short of bringing the subject down to the present.

Léčení diabetu [By] Dr. Otakar Postranecký [Therapy of Diabetes With Separate Diet Tables] Cloth Pp 158 Prague The Author 1937

This is a small volume designed primarily as a guide for the treatment of diabetes for the general practitioner. It is a fairly complete summary of the practical treatment of diabetes illustrated by many examples of patients and diets. It is arranged primarily for local use and as such it should serve as a guide for the man in general practice. It is not as critical a study as a similar volume which came from Prague in 1932 from a group of younger men from Professor Pelnar's clinic and it does not conform altogether with the ideas in this country. The chapters on coma and complications are well written. The impression given, however, is one of a somewhat unnecessarily involved management of the patient.

A Handbook on Diseases of Children Including Dietetics, Welfare and the Common Fevers By Bruce Williamson M.D. M.R.C.P. Physician to the Royal Northern Hospital London Second edition Fabrikhold Price \$4 Pp 329 with 62 illustrations Baltimore William Wood & Co 1936

This handbook will probably win the favor of the student as well as of the practitioner. In it are condensed the important phases of pediatric practice. It is thoroughly scientific, and accuracy has not been sacrificed in an effort to save space. Each disease is completely discussed, including a short statement concerning the treatment. A chapter on the formulary is included. In this revision certain chapters have been rewritten in accordance with the recent advances in pediatrics.

Handbook of Microscopical Technique for Workers in Animal and Plant Tissues Edited by C. E. McClung Ph.D. Professor of Zoology and Director Zoological Laboratory University of Pennsylvania Second edition Cloth Price \$8 Pp 698 with 82 illustrations New York Paul B. Hoeber Inc., 1937

This book, not being cyclopedic in aim, exhibits the advantages and the faults of a series of essays written by thirty-four authors on a subject that is still more art than science. It begins with an eight-page discussion of methods written for beginners by the editor. The chapter on the study of fresh material (ninety-one pages) includes an admirable account of the aims and procedures of microdissection. Twenty-three pages are devoted to the staining of bacteria, ninety pages to botanic methods, and here is the only discussion of hypoid techniques. Cytologic methods cover twenty-four pages, embryologic method thirty-three pages. The chapters on hematology (forty-five pages) include physical, chemical and histologic methods for the study of blood and blood-forming organs. Fifty-eight pages are given to bone and teeth, thirty-five to connective tissue and muscle, 185 to the central nervous system, thirty to the Protozoa. There is a general consideration of the effects of fixatives on living tissue and a chapter on staining which lacks any real understanding of the theory of staining but includes a comprehensive list of stains, their synonymy and some of their uses. A final chapter entitled "miscellaneous" includes methods of illumination for fresh study and microincineration, with an excellent though brief discussion of microchemical theory and one on fluorescent microscopy. Deficiencies in the work are: 1. Lack of an adequate discussion of the microtome knife and the sharpening of it. 2. Absence of an account of the celloidin methods by one of the many who regard these as the only adequate section methods. 3. No mention of any sense organs, although the outmoded "silver in the block" methods are given much space and space has even

been taken for pictures showing an author's idea of the correct arrangement of reagent dishes on the table and shelves. 4. The discussion of fixation by perfusion is defective because the author is not aware of the errors involved in washing out the blood with saline solutions and of the danger of using strong fixatives. He does not refer to the fundamental observations of Sauer on the effects of delay in fixing embryos. In the account of the Golgi apparatus, the theoretically important work of Owens and Bensley is omitted.

Evaluation of the Industrial Hygiene Problems of a State By J. J. Bloomfield and Mary F. Peyton Junior Chemist United States Public Health Service Prepared by direction of the Surgeon General U. S. Treasury Department Public Health Service Public Health Bulletin No. 236 Paper Price 15 cents Pp 126 Washington D. C. Supt. of Doc. Government Printing Office 1937

A somewhat detailed study of one fifth of the gainful workers in the state of Maryland shows that nearly all these workers were "exposed" to some sort of harmful material. There is no very clear definition of exposure. "With reference to medical facilities, this survey revealed that 31 per cent of the employees had the services of a full time medical practitioner and 42 per cent a part time physician. A first aid room was available to 56 per cent of the employees, while trained first aid workers were available to 65 per cent of the workers. There was practically no part time nursing service, but, on the other hand, 40 per cent of the workers were provided with full time nurses. The information on disability statistics showed that nearly half of the workers were members of sick benefit associations, while sickness records were kept for approximately 55 per cent of the employees." Perhaps the most valuable section of the report is the appendix on material for a reference library, which constitutes an extensive bibliography to sources of information on industrial hygiene.

Der einfache Schleimhautkatarrh der oberen Luftwege und seine Behandlung Von Professor Dr. Arthur Thost Mit einem Anhang Die Beschwerden der Sanger Schauspieler und Redner Paper Price 6.60 marks Pp 130 Berlin Julius Springer 1937

This is a rather lengthy work featuring in great detail the diseases of the upper respiratory tract with a special portion devoted particularly to singers, actors and public speakers. There is much that is of value in this work, with a considerable amount that in this country at least would not be considered important. The various medicaments, oils, sprays and mineral waters, it is now felt, do not have the importance in therapy they once possessed. Nevertheless, the specialist and even the general practitioner wishing a complete discussion of catarrh of the nose and throat may get it from this monograph.

Feeding Our Children A Simple and Understandable Exposition of the Principles of Nutrition Together with Their Practical Application to the Task of Planning Meals for the Various Ages By Frank Howard Richardson A.B. M.D. F.A.C.P. Cloth Price \$1 Pp 159 New York Thomas Y. Crowell Company 1937

Books on the feeding of children are myriad. Whether they are read by mothers who need the knowledge they contain is questionable. While the present volume contains essential information concerning the principles of nutrition and the practical planning of diets, it is of such length that it possibly may not fill the need for which it is intended. If a child becomes ill, his feeding should be carefully supervised by the physician. A few simple rules should suffice for the planning of the normal daily diet. Those mothers who are interested in the subject of child nutrition often become unnecessarily concerned about the matter of planning the child's diet. The book, however, is well written and simple enough so that it is easily understood. Those mothers who read it probably will find their efforts well expended.

Over zweren in maag en duodenum bij Inheemschen en Chinezen in Nederlandsch Indië Door Raden Soeharto Proefschrift ter verkrijging van den graad van doctor in de geneeskunde aan de geneeskundige hogeschool te Batavia [Ulcers of Stomach and Duodenum in Natives and Chinese in Netherland Indies Thesis for Doctor's Degree at Batavia Medical School] Paper Pp 93 Batavia C. Druk G. Kolff & Co [n. d.]

The author reviews the Dutch Indian literature on gastric and duodenal ulcers and discusses their frequency as demonstrated at necropsy and as diagnosed clinically in the medical

and surgical sections of the hospital at Batavia. He describes the anatomically and presumably etiologically abnormal types of ulcer and the other inflammatory changes of the gastric mucosa. Necropsies and clinical observations show that Chinese males have ten times as many gastric ulcers as the Malays and that gastric ulcer predominates over duodenal ulcers. The opposite is true for the Malays, in whom the etiology of the ulcers varies greatly and differs from the common type, not infrequently being of tuberculous origin. This thesis is only of local interest.

E. Merck's Jahresbericht Über Neuerungen auf den Gebieten der Pharmakotherapie und Pharmazie 50 Jahrgang 1936 Paper Pp 430 with 10 illustrations Darmstadt J. Merck 1937

The 1936 issue of Merck's Jahresberichte is its fiftieth anniversary. Professor Heubner's short preface portrays with great exactness the spirit of the entire enterprise of Merck as a firm, scientific research institution and literary review exchange of pharmacotherapy and pharmacy. There is one article on modern methods of drug and pharmaceutical analysis which discusses microchemical procedures. That this review appears from the control laboratory of E. Merck, Darmstadt, proves Merck's far-sighted leadership in the pharmaceutical field. The description of a new class of drugs, namely, the derivatives of coumarin-3-carboxylic acid, is especially well done. Also valuable is a pharmacologic investigation of European official and unofficial herbs. The Jahresberichte are most valuable for pharmaceutical control and research institutions and should be in the libraries of all educational centers.

Everyday First Aid By Walter Frank Cobb M.D. Medical Examiner Department of Hygiene College of the City of New York Cloth Price \$1.50 Pp 269 with 25 illustrations New York & London D. Appleton Century Company Incorporated 1937

Too frequently writers of books on first aid have erred in attempting to give too much information. This volume is different. It is unique in its manner of presentation. The reader is given an actual case to "aid," through the news report at the beginning of each chapter. In a way, each chapter is a "practice lesson" on what to do. The simple line drawings are helpful and well chosen to illustrate each lesson. The author does not indulge in moralizing to gain his objective but rather by skilful analysis leads his readers to think along the correct lines of first aid. Using the three letters of the word AID as key letters, the author states that all problems require the same technic. Thus, AID becomes "Ask—Inspect—Do." Emphasis is placed on practice. The physician can conscientiously recommend this book as an excellent addition to family libraries.

Heart Failure By Arthur M. Fishberg M.D. Associate in Medicine Mount Sinai Hospital New York City Cloth Price \$8.50 Pp 788 with 25 illustrations Philadelphia Lea & Febiger 1937

This book is intended primarily, the preface states, for the general practitioner. It discusses in considerable detail the newer investigations and theories concerned with adequate and failing circulation. The methods of determining the state of the circulation by clinical and laboratory means are extensively described. Since it is always helpful to understand the physiologic process causing a particular clinical picture, this volume should be of great value to practicing physicians. Because of its length and extensive citations of original authorities it probably will be found more useful as a reference book than as one that will be read from cover to cover.

Over het elimineeren van darmgassen storend voor de röntgendiagnostiek Door Linslo Willem van der Burg officier van gezondheid bij het Koninklijk Nederlandsch Indisch Leger Proefschrift ter verkrijging van den graad van doctor in de geneeskunde aan de geneesindige hogeschool te Batavia [Elimination of Intestinal Gases Which Interfere with Roentgen Diagnosis Thesis for Obtaining Doctor's Degree at Medical School of Batavia] Paper Pp 102 with 12 illustrations Brandoeng Java N. V. Maatschappij Vorkink 1937

The author describes the physiology and pathology of the digestive tract in relation to intestinal gases, the general preparation of the patient and the cleaning of the digestive tract, as prescribed in the literature. He discusses critically the current views described and proposes a personal method to eliminate the disturbing gases. It is wrong to let the patient

fast on the morning of the roentgen examination or to use charcoal preparations to absorb the gases. Castor oil, he believes, is superior to all other laxatives, the cleansing enema should be given with the patient lying on the right side and the roentgen examination should take place immediately after the enema has acted, the patient remaining on his right side until the moment of examination. Various drawings and copies of roentgenograms illustrate this interesting thesis.

Notes on Clinical Laboratory Methods Standing Committee on Laboratory Methods University of Glasgow Third edition Cloth Pp 86 with 6 illustrations Glasgow John Smith & Son Ltd 1936

This book covers only simple laboratory procedures used in "side room testing." It includes routine blood, urine, sputum and feces analyses and a few important special chemical tests. Although all the necessary information concerning these tests is included, it is not always clearly presented. Moreover, American medical students and technicians will find the book of little value, since it is specifically for Glasgow hospitals and many of the methods described are rarely used in this country.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Limitation of Actions, Accrual of Right of Action—The plaintiff suffered from "malignant destructive myopia," threatening practical blindness in her right eye. The defendant, a physician, performed an operation on that eye, Jan 9, 1930, consisting, in the words of the defendant, of "what we call needling, breaking the capsule which holds the lens, breaking into the capsule and breaking up the lens to some extent so that the water in the anterior chamber is absorbed into the lens, causes the lens to soften and absorb and disappear." The vision in that eye seemed thereafter to have improved temporarily and a similar operation was performed on the left eye on May 11, 1930. The right eye, however, began to grow worse again, it appearing that after a lens has been removed the posterior capsule frequently becomes opaque, making it necessary to needle it also. Accordingly, the defendant performed a second operation on the right eye on May 9, 1931. Inflammation developed, which made necessary still another operation, May 11, 1931. Finally, in July 1931 the right eye had to be enucleated. The patient, Aug 8, 1932, brought an action in trespass to recover damages for the injuries to the eye and its ultimate loss. She did not claim that either the original or any subsequent operation was ill advised or was negligently performed. The action was for false and fraudulent representations, based on the allegation that the defendant had assured her that the operation was not a serious one and that it would correct her vision and would enable her to dispense with glasses. The trial court entered judgment for the defendant and the patient appealed to the Supreme Court of Pennsylvania.

The only question presented on appeal was whether or not the action was barred by the statute of limitations which required that it be brought within two years from the time when the "injury was done." The physician contended that the "injury was done" at the time of the first operation, Jan 9, 1930, and that therefore the two year period had elapsed before the suit was instituted. The plaintiff, on the other hand, contended that the statute began to run when the second operation was performed, May 9, 1931. The statute begins to run, said the Supreme Court, at the time the injury was done even though the damage may not then be known and may not in fact have occurred until afterward. Whatever injury was done to the plaintiff in the present case was occasioned by the first operation from which her condition on May 9, 1931, was a direct outgrowth. The secondary or capsular cataract removed at that time would not have occurred but for the operation on the lens. The patient contended that she could not know the

original operation was unsuccessful until the later measures proved unavailing and therefore the statute should not be held to run until that time. This argument, answered the Supreme Court, rested on a misapprehension of the nature of the present action. The suit was not based on a promise or guaranty that the plaintiff would be cured, the alleged fraudulent representations were that an operation of the type here involved was not serious and was practically certain to effect a cure. Obviously, the plaintiff was not obliged to wait for the outcome of her own operation in order to discover whether or not the representations were true. Even before the operation was performed at all, she by inquiry from the medical profession could have ascertained whether the operation was of the nature represented by the defendant, whether it was serious or inconsequential, and whether it was speculative or almost certain in its results. While the running of the statute is postponed where by some independent act of fraud or concealment a wrongdoer prevents discovery, there was no evidence of any such independent act on the part of the physician.

The judgment in favor of the physician was accordingly affirmed—*Bernath v Le Fever (Pa)*, 189 A 342

Health Insurance Disease Defined—The defendant insurance company agreed to pay the plaintiff certain benefits if he became "totally and permanently disabled, as a result of bodily injury or disease occurring and originating after the issuance" of two policies of insurance, issued in 1927 and 1928, respectively, thereby preventing him from engaging in any occupation and performing any work for compensation or profit. In July 1929 the insured was forced to cease work because of hypertrophic arthritis. For five years the insurance company paid the benefits. It then ceased payments, contending that the plaintiff's disability arose out of a disease originating before the issuance of the policies. The plaintiff brought suit on the policies and obtained a judgment in the trial court. The insurance company brought exceptions to the Supreme Judicial Court of Massachusetts.

There was no expert testimony, said the court, that the disease causing the plaintiff's disability first appeared after the policies were issued. Six physicians were called as witnesses, four testified that the plaintiff must have suffered from the disease before the dates of the policies and the other two expressed no opinion on the question. The testimony of the plaintiff alone, to the effect that he had no trouble until July 1929, tended to show that the hypertrophic arthritis appeared after the year 1928. The trial court ruled that "The word 'disease' means an active or efficient deviation from the healthy or normal condition of any of the functions or tissues of the body, an abnormal alteration of the state of the body or of some of its organs which interrupt or disturb the performance of the vital functions, and result in pain or weakness." This ruling was erroneous, said the Supreme Judicial Court. A disease may exist without pain or weakness. Even if it be assumed that the insured was afflicted by progressive hypertrophic arthritis before 1927, under this ruling the plaintiff could not be found to have had a "disease" before July 1929 if he felt no ill effects until that time. This result is not in accord with the layman's idea of disease, which is satisfied if the abnormal alteration causes or threatens pain or weakness. In *Mejer v Fidelity & Casualty Co of New York*, 96 Iowa 378 65 N W 328, 59 Am St Rep 374, the court said

By the use of the word disease we desire to convey the impression of a morbid condition resulting from some functional disturbance or failure of physical function which tends to undermine the constitution. We do not as a general rule apply [the] term to a slight and temporary disorder or to the imperfect working of some function which is over in a short period of time and which when recovered from leaves the body in its normal condition. In using [the word] we do not as a rule refer to a slight and mere temporary disturbance or enfeeblement. If this is true of our ordinary speaking and writing it is certainly clear that the [word] should be given no broader meaning when we find [it] used by an insurance company in a clause of its policy which it relies upon to defeat a recovery thereon.

The Supreme Judicial Court thought it plain that a man who, although he appears to be in sound health, suffers pain or weakness or who suddenly dies as a direct result of some abnormal condition of his body, without suffering in any way, has in the common speech of persons, a "disease." The ruling made by the trial court impliedly denies this possibility.

The Supreme Judicial Court accordingly sustained the exceptions brought by the defendant company—*Palumbo v Melro politan Life Ins Co (Mass)*, 5 N E (2d) 836

Workmen's Compensation Acts Strangulation of Pre-existing Hernia Compensable—The worker, while engaged in the course of his employment in lifting railroad ties, sustained a strain which resulted in the strangulation of the contents of an existing hernial sac. A gangrenous condition ensued and an operation performed three days later failed to avert death. An award of compensation in favor of the widow by the workmen's compensation bureau of New Jersey was affirmed by the court of common pleas but was reversed by the supreme court. The widow then appealed to the Court of Errors and Appeals of New Jersey.

The workmen's compensation act specifies, in detail, the circumstances under which a hernia must occur in order to constitute it a compensable injury. The intermediate appellate court, the supreme court, held that the death was not compensable because the hernia did not occur under the circumstances set forth in the act. But, said the Court of Errors and Appeals, the reasoning of the supreme court did not take into consideration the essential difference between the occurrence of a hernia and the traumatic aggravation of that bodily infirmity. Manifestly, the workman in this case could not have met the requirements of the act, for the hernia did not follow but long preceded the accident made the basis of the claim for compensation. His widow did not seek compensation for the hernia but for the death directly traceable to the accidental aggravation of the pre-existing disease condition of body. Concededly, the workman's death was caused by the strangulation and the supervening gangrenous condition of the intestinal content of the hernial sac. If extraordinary strain resulting from the lifting of the ties was the causative agent of the strangulation, the fatality was the consequence of an accidental injury within the meaning of the New Jersey workmen's compensation act. The workmen's compensation bureau found there was a definite and direct relation between the accidental strain suffered by the workman and his death three days thereafter. An accident which sets in motion the undeveloped and dangerous physical conditions with mortal consequences, is properly classable as the proximate cause of the fatality. The court, therefore, reversed the judgment of the supreme court and ordered an award for the widow—*Furferi v Pennsylvania R Co (N J)*, 189 A 126

Society Proceedings

COMING MEETINGS

- Academy of Physical Medicine Philadelphia Oct 19 21 Dr Herman A Osgood 144 Commonwealth Ave Boston Secretary
American Academy of Ophthalmology and Otolaryngology Chicago Oct 10 15 Dr W P Wherry 107 South Seventeenth St Omaha Executive Secretary
American Clinical and Climatological Association Baltimore Oct 11 13 Dr Francis M Rackemann 263 Beacon St Boston Secretary
American College of Surgeons Chicago Oct 25 29 Dr George W Cline 40 East Erie Street Chicago Chairman Board of Regents
American Public Health Association New York Oct 5 8 Dr R M Atwater 50 West 50th St New York Executive Secretary
Association of American Medical Colleges San Francisco Oct 24 26 Dr Fred C Zapffe 5 South Wabash Ave Chicago Secretary
Association of Military Surgeons of the United States Los Angeles Oct 14 16 Dr H L Gilchrist Army Medical Museum Washington D C Secretary
Central Association of Obstetricians and Gynecologists Dallas Texas Oct 14 16 Dr Ralph A Reis 104 South Michigan Blvd Chicago Secretary
Clinical Orthopaedic Society Chicago Oct 14 16 Dr H Earle Conwell 215 Medical Arts Bldg Birmingham Ala Secretary
Delaware Medical Society of Wilmington Oct 12 13 Dr W H Speer 917 Washington St Wilmington Secretary
Indiana State Medical Association French Lick Oct 4 6 Mr T A Hendricks 23 East Ohio St Indianapolis Executive Secretary
Inter State Postgraduate Medical Association of North America St Louis Oct 18 22 Dr W B Peck 27 E Stephenson St Freeport Ill Managing Director
National Society for the Prevention of Blindness New York Oct 6 8 Mr Lewis H Carrus 50 West 50th St New York Managing Director
New York State Association of Public Health Laboratories Albany Oct 29 Miss M B Kirkbride New Scotland Avenue Albany N Y Secretary
Omaha Mid West Clinical Society Omaha Oct 17 22 Dr J D McCarthy 107 South Seventeenth Street Omaha Secretary

Oregon State Medical Society, Salem Oct 21-23 Dr Morris L Bridge
man 1020 S W Taylor St Portland Secretary
Pennsylvania Medical Society of the State of Philadelphia Oct 4-7
Dr Walter F Donaldson 500 Penn Avenue Pittsburgh Secretary
Society of Surgeons of New Jersey Trenton November 20 Dr Walter
B Mount 21 Plymouth Street Montclair Secretary
Vermont State Medical Society St Johnsbury Oct 14-15 Dr A B
Soule Jr Mary Fletcher Hospital, Burlington Secretary
Virginia Medical Society of Roanoke Oct 12-14 Miss A V Edwards,
1200 East Chy St Richmond Secretary

THE AMERICAN RHEUMATISM ASSOCIATION

*Fourth Annual Meeting and Sixth Conference on Rheumatic Diseases
held in Atlantic City N J June 7 1937*

LORING T SWAIN, M.D., Boston Secretary

The Diagnosis and Cure of Rheumatoid Arthritis

DR RUSSELL L CECIL, New York Perhaps the most important problem which confronts a young medical organization such as the American Rheumatism Association is the proper orientation of the society in the field which it proposes to cover. The next task is to attack the problems of nomenclature. This has already been done in England. For example, the British National Committee divides rheumatoid arthritis into two main divisions: (1) rheumatoid arthritis with associated factors, (2) rheumatoid arthritis with no known associated factors. It seems to me that this division of the disease into two groups is hardly justified. The two types present the same pathologic and clinical manifestations and the immune responses are the same for the two groups.

In discussing the necessary criteria for the diagnosis of rheumatoid arthritis, one may divide them into pathologic, clinical, radiologic and serologic observations. The pathologic observations are quite definite but unfortunately are not obtainable except by means of biopsy. The clinical criteria are the most important of all, and of these the most characteristic are the fusiform finger and the multiplicity of joints involved. Subcutaneous nodules are also a valuable sign when present. The x-ray appearance of the bones and joints in rheumatoid arthritis is highly characteristic, so much so that it is usually possible to make a diagnosis of the disease by this means alone. The most characteristic blood change in the rheumatoid arthritis is the agglutination of *Streptococcus haemolyticus* by the patient's serum, usually in high dilutions. This test is positive in a large percentage of cases, the actual percentage of the positive reactions depending on the duration of the disease. Another reaction of considerable importance is the sedimentation rate of the red blood cells. A moderate grade of leukocytosis with some increase in the percentage of immature cells is seen in many cases.

What are the criteria for determining the cure of rheumatoid arthritis? Many writers fail to take into account the natural tendency of the disease to remissions and exacerbations. I believe that the first requirement for cure would be freedom from pain and swelling of the joints and a partial or complete return of joint function. The patient should also feel well and should be entirely free from the exhaustion and fatigue that so frequently accompany the disease. In the cured case the sedimentation rate should return to normal and the specific agglutinins with the hemolytic *streptococcus* should disappear.

It would be worth while for our society to appoint a committee whose duty it would be to set up certain criteria for the diagnosis and cure of rheumatoid arthritis. Copies of these criteria should be in the hands of every member of the society.

DISCUSSION

DR DOUGLAS TAYLOR, Montreal, Canada A table published in the June issue of the *Canadian Medical Association Journal* uses x-ray changes for grouping. In stage 1, while a decalcification is present there is no joint change. In stage 2 there is a definite retraction of the joint space with loss of cartilage or bone and further increase of decalcification and osteophytes or spurs. In the third stage there is a definite deformity with subluxation, and in the fourth stage there is destruction of the joint and ankylosis. The clinical features fit in well with these four roentgenologic stages. In the first stage there is slight

pain and stiffness, in the second, moderate pain, stiffness and crepitus, with prolonged limitation of motion in the various joints. In the third stage the patient has severe symptoms, with deformities and limitation of motions. These patients may be able to walk but require assistance, they are definitely incapacitated and not able to work. In the fourth stage the patient is usually bedridden and confined to home or institution. We have used this method in our clinic at the Royal Victoria Hospital, Montreal, for the last year and a half. I am submitting it as a means to help group arthritic patients. It is devised for rheumatoid and osteoarthritis but with slight modification can be used for any type of arthritis. There are certain cases difficult to classify correctly, but in the main I think these divisions should prove useful. The chart is published in the June issue of the *Canadian Medical Association Journal*.

DR RUSSELL L CECIL, New York I think that Dr Taylor has a fine idea. This is one of the phases of arthritis that the Committee on Nomenclature should take up.

Environmental Factors in Rheumatoid Arthritis

DR STANLEY COBB, ISABEL WHITING, M.A., M.S., and DR WALTER BAUER, Boston Fifty patients with rheumatoid arthritis were interviewed in the arthritic outpatient department clinic or in the wards of the Massachusetts General Hospital. The cases were not selected. The social worker, during about an hour's interview, recorded on a life chart the social data. Later the social worker or one of the physicians filled in the history of the arthritis. Any chronological correlation between attacks of arthritis and environmental stress then became apparent and was indicated in black in the middle column of the life chart. In the ordinary case record the important points are often entirely missed, e.g., that Mary's symptoms began a week after her engagement was broken or that John's began the year he lost his good job and had to begin on new and uncongenial work.

Summarizing the facts in the fifty life charts, in thirty-three cases out of fifty there seemed to be a significant relationship, in seven such relationship was doubtful, and in ten it was entirely lacking. The commonest environmental burden chronologically associated with arthritic attacks was unhappiness within the family (eleven cases); three of these situations led to separation of husband and wife. Severe financial worry coincided with attacks in ten cases. The loss of a parent or spouse preceded the attack in seven cases. Other forms of stress or combination of these were associated with onset of symptoms in the other five cases. The situations were usually complex and therefore simple classifications are unsatisfactory, but the main facts seem to be significant, although the interviews were too short to obtain reliable psychologic data. Nevertheless this survey indicates a relationship between emotional stress and the attacks of rheumatoid arthritis in 66 per cent of fifty cases.

Ten of the fifty cases showed no relationship. In seven the data were equivocal, no definite coincidence in time between the appearance of symptoms and the history of environmental stress could be made out, although the same factors of worry, uncertainty and unhappiness appeared in the life histories of these questionable cases as in the thirty-three in which the relation was obviously significant.

In this limited survey a relationship between environmental stress and onset (or exacerbation) of arthritis is brought out by the life chart in two thirds (66 per cent) of the fifty cases. For a further demonstration of this relationship an intensive study of a few patients is needed. This is being done by Dr Giles Thomas in New York. It is also important to have more control material. So far, we have examined twenty-five cases of varicose ulcer in exactly the same way as with rheumatoid arthritis. Varicose ulcer was chosen because it is a disease with rather obvious etiology and attacks people in about the same age and sex group as the arthritis. In twenty-five cases examined in this way there were only two in which there appeared to be a coincidence in time relation between the onset of the ulcer and social stress in the environment. There were no cases that seemed of doubtful significance and twenty-three showed no significant relationship.

DISCUSSION

DR. GILES THOMAS, New York A year ago I reported a series of thirty-one cases and the observations were in general agreement with those of Dr Cobb and his co-workers. I found what I thought was a significant emotional factor in all cases. I think I went into somewhat more detail in the psychiatric examination, and also my series was smaller than theirs. This may account for the discrepancy, but perhaps it is not important. If one can find an important emotional disturbance in every case of rheumatoid arthritis, what significance has the observation? As soon as one begins to discuss this problem, one is told that significant emotional disturbances can be found in any one, and, the informant adds, "if you examine the department of medicine you will find just as much, and if you examine the department of psychiatry, twice as much." In spite of these difficulties, I think it is possible to come to some conclusions. The authors' series of controls of patients with varicose ulcer indicates this. There is another controlled series now being studied by Dr Ludwig in Dr Bauer's clinic. *Gonorrheal arthritis often resembles rheumatoid arthritis, but uncomplicated gonorrhea occurs also.* It occurred to Dr Ludwig that if uncomplicated cases of gonorrhea and cases of gonorrheal arthritis were both examined psychiatrically, the cases of uncomplicated gonorrhea might serve as controls. *The infection would be the same in the two series, and if the incidence of emotional disturbance differed greatly in the two series it might be possible to draw some conclusions about the role of emotional factors in gonorrheal arthritis, and perhaps by analogy in rheumatoid arthritis.* I have not examined any cases of uncomplicated gonorrhea psychiatrically, but I have seen a few cases of gonorrheal arthritis and have found that the same psychic disturbances are present as in rheumatoid arthritis. If it is assumed that emotional disturbances play a part in the genesis of rheumatoid arthritis, through what mechanism could this influence act? Emotional disturbances have a definite and pronounced effect on physiologic function, and it seems reasonable that a prolonged disturbance of physiologic function could give rise to structural changes, with or without the presence of infectious or traumatic agents. I find no difficulty in demonstrating emotional disturbances in patients with rheumatoid arthritis, but if this is a factor why should the patient get rheumatism rather than gastric ulcer, hyperthyroidism or some other disorder? This is a problem for which no answer is available. Perhaps there is a constitutional factor. An attempt to answer this question has been made by Dr G. C. Booth of New York. He compared patients with arthritis and paralysis agitans, and found significant differences in their modes of reaction which he believed were important in determining which diseases appeared. I feel that as yet there has not been enough work done to form a basis for drawing any conclusions. I think that the localization of the disease, that is, the joints involved, may often be influenced by psychologic factors in the same way that the localization of symptoms is determined in conversion hysteria. If the neurotic factor is as important in rheumatoid arthritis as I think it is, treatment of the neurosis should improve the arthritis. I have noticed that some patients I examined and talked with a few times seemed relieved after a discussion of their problems, and the arthritis was symptomatically better. A few were definitely upset and the arthritis worse. At the present I am psychoanalyzing two patients, but it will be some time before I shall be ready to make a report.

DR. H. ARCHIBALD NISSEN, Boston The work that Dr Cobb and his co-workers have presented is enlightening. If they can follow up each patient along the same lines, it will be interesting to hear their observations at the end of a five year period. I find that the patient's adjustment to his emotional problems, rather than the emotional problems per se, is the point of greatest importance. Such a study does not mean just one visit, it means repeated visits at the hospital, home or office. In time the patient usually volunteers information on changes in muscles and joints which his own observations have told him resulted from various emotional upsets. Thirty per cent of the group in which I have been particularly interested have become bedridden or wheel chair patients. Watching this group year by year, one finds as a characteristic

a contented emotionalism, so to speak—a rather smug self complacency. No matter what is done for that individual something else is always needed. For instance, one man started in with nothing more than a bruise on one knee, received when he slipped from the second step of a stepladder. It was a year and a half before he had hospital care. Had he been seen at this time and studied from a psychogenic point of view, the personality abnormalities might have been recognized before actual joint damage had occurred. They might have been corrected, or at least brought into the man's consciousness, thinking. Of course, they may have been too deep seated even at this time to be susceptible to change by recognition, but I believe that this type of joint reaction is evidence of severe psychosis. As it was, he had several operations: tonsillectomy, transfusions, teeth extractions, manipulations. At the end of a year he left the hospital worse than when he was admitted. Under new therapy he appeared to improve for a year, then the downhill course was resumed, as if the "will to be ill" had conquered the "will to be well." What can we do from a therapeutic point of view? First, by studying each patient's manner of adjustment we can estimate partially the degree of psychogenic maladjustment and the possible type of organic reaction (always bearing in mind Jelliffe's question "What price healing?"). Sometimes the somatic manifestations are less deadly than the psychic. Second, we can assist the individual to recognize such conditions and help himself, third, we may reach a correct prognosis more rapidly than when the body alone is studied and the patient's psychology is ignored. Coincidentally, the body and its physiology must be treated symptomatically and specifically. Dr Cobb has opened the way. If each year he will give the results of follow-up studies I know we shall learn a great deal more about the real importance of psychogenic factors as related to the origin, remission and relapse of rheumatic diseases.

DR. ROBERT B. OSGOOD, Boston An active medical man, about twelve years ago, with some worries began to have a typical rheumatoid arthritis, with some erosion of the bones. Rest and freedom from worry led to recovery except for one wrist by the very criteria Dr Cecil has mentioned. He carried on a heavy hospital service for eleven years without any return of his arthritis, but then a combination of worries that would have floored almost any man led to an exacerbation of his arthritic condition. The only thing that anybody has been able to find in his case is this accumulation of worry to account for the recurrence of his syndrome of rheumatoid arthritis. The worries were overcome, rest and therapeutic measures were instituted, and the patient is now prepared to go back to work. This is a striking case, helping to emphasize the point to which the authors have called our attention so well.

DR. ABRAHAM S. GORDON, Brooklyn I wonder whether the authors know of any one who has made a comparative study of a subject such as asthma. I mention this in particular because I believe that if such a study were made it would show as high a percentage as the one shown here in arthritis. Therefore, it brings us back to the original question of predisposition of the patient with the clinical syndrome of arthritis rather than merely the manifestations of arthritic symptoms.

DR. WALTER BAUER, Boston Rheumatoid arthritis is a disease of unknown etiology characterized by remissions and relapses. All are interested in knowing not only the cause of this disease but also the various factors responsible for the many unexplained remissions and relapses. In following a group of these patients from month to month, one sees many unexplained relapses. A careful history fails to elicit any one of the frequently mentioned precipitating factors, such as upper respiratory infections, constipation or physical trauma. In the same group, however, one can frequently elicit a history of the existence of disturbing environmental factors. Such disturbing factors in certain instances were present preceding the onset of the disease. I might briefly mention the history of a young woman whose marriage was postponed because her father fell ill with a severe arthritis. On the day planned for her marriage she noted for the first time swelling, redness and pain of the midphalangeal joint of the ring finger. Her arthritis gradually progressed so that now she is suffering from a fairly extensive rheumatoid arthritis. It is interesting

that the first joint involved was the midpharyngeal joint of the ring finger of the left hand. How do these emotional factors affect the individual? Undoubtedly some of the vasomotor and neurologic symptoms these patients complain of are a direct result of such environmental factors. However, one would like to know what other physiologic processes are affected. Do they result in actual disturbances of the physiologic function of the normal joint and thus play a major etiologic role? A better understanding of the anatomy and physiology of the normal joints is essential to a knowledge of how these factors operate. The answer to these and many other questions must be found before the role can be fully evaluated of such factors in the production of rheumatoid arthritis and the many unexplained remissions and relapses encountered. I doubt whether the emotional disturbances alone are ever the sole cause of the disease. I believe an infectious agent is necessary for the production of this disease state. Is it possible that either factor alone is incapable of producing the disease but the combination of the two results in rheumatoid arthritis? We do not know. Similar control studies will be carried out on a series of patients with gonorrheal arthritis. Dr Cobb is also making such a study in a group of asthmatic patients.

(To be continued)

Current Medical Literature

AMERICAN

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- Ten Year Statistical Report of Carcinomas of the Cervix F W Smythe Memphis Tenn—p 317

Treatment of Cervicovaginitis with Silver Picrate Suppositories—Kobak and Frankenthal find that silver picrate suppositories are easily used and find their way into all the crypts of the vaginal canal and still are not expelled prematurely with subsequent loss in efficiency. They have been used in the treatment of twenty-two cases of cervicovaginitis in children. The cooperation of the class of mothers that the authors were dealing with could be assured only when their duties were easy to comprehend and did not entail much effort. The suppositories were inserted nightly after the vulva between the labial folds was cleansed with bland soap. The suppository used was of such size that it should readily pass the hymen and of such length that it occupied the entire length of the vagina. It has a boroglycerin gelatin base. The dosage of silver picrate was 0.065 Gm to each suppository. It melted readily at body temperature and appeared to diffuse easily throughout the surface of the vagina into its crypts. The material was observed to adhere well to the vaginal surface with which it came in contact. The patients showed rapid and definite improvement, as evidenced by the quick disappearance of the discharge. The recorded observations of the mothers also confirmed this improvement. Five of the patients had a permanent negative smear after one week of treatment, and three became negative in three weeks. Four patients became permanently negative after six to nine visits to the clinic. Only one patient remained resistant to treatment and did not become permanently negative until fifteen visits had been made. The nonspecific group likewise showed a rapid response to this therapy.

American Journal of Ophthalmology, St Louis

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Pathologic Processes of Small Intestine—Elward believes that the x-rays play a most important part in the early and accurate diagnosis of gastro-intestinal pathology. This is particularly true in the diagnoses of lesions of the duodenum, jejunum and ileum. The roentgen examination of the small intestine is a combined use of roentgenoscopy and roentgenography, a contrast medium, usually purified barium sulfate,

being used. If sufficient information is obtained to warrant a diagnosis of obstruction by roentgenoscopic and flat-film studies, a contrast medium should not be used, because the hard, inspissated masses of barium sulfate may interfere greatly with the surgical procedure necessary to afford relief. The roentgenoscopic method depends on the fact that the small intestine normally does not contain gas or fluid in sufficient quantities to form a level of fluid visible when the patient is examined in the upright position. It also gives some idea of the size of the small intestine and the location and duration of the obstruction. The method of using a contrast medium is particularly applicable to cases of partial obstruction in which the time element is not paramount. The method is of value in tuberculosis, hernias, anomalies, partially obstructive new growths, diverticula, displacements, ulcers and adhesions. Retention of twenty-four hours in the ileum may be considered pathologic if there are no factors, such as higher obstructive lesions, pyloric stenosis, gastric ulcer or duodenal ulcer, to interfere, or lower obstructive lesions, such as cancer of the cecum. An incompetent ileocecal valve may also account for the twenty-four hour ileac retention, this, however, is a regurgitation rather than a retention. The opposite condition is seen when the entire barium sulfate meal has passed into the colon in six hours, when hypermotility is said to exist. Repeated and detailed examinations should be made to determine the cause or causes, some of which are tuberculosis, simple ulcer, achylia gastrica and scirrhus carcinoma. A too large gastro-enterostomy stoma or purgative drugs may cause a pseudohypermotility.

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Transmission of Poliomyelitis to Animals—Kolmer and his co workers attempted to transmit the virus of poliomyelitis of a single monkey passage strain to young rabbits, mice, guinea-pigs, chickens and ferrets with and without depression of the marrow and lymphoid tissues by x-rays. The inoculations were intracerebral, intravenous, intranasal, intraperitoneal and intracasternal. All animals were kept under daily observation for at least two months for any recognizable clinical evidences of infection, and the spinal cords of all those dying were examined microscopically for any histologic evidences of poliomyelitis. Of twenty young rabbits varying in age from 4 to 6 weeks variously inoculated, only one succumbed in twenty-four hours after intracerebral inoculation and all four after intravenous injection. None showed any recognizable clinical evidences of infection, and no lesions suggestive of infection of the spinal cord were found on microscopic examination. It may be, however, that infection occurred after intravenous inoculation, since all inoculated by this route died. In six ferrets inoculated intracerebrally and intraperitoneally, no clinical evidences of infection developed and none died. Twelve young guinea pigs were inoculated intracerebrally, intravenously and intraperitoneally. Three died with no recognizable lesions in the spinal cords and the surviving nine animals showed no demonstrable clinical evidences of infection. Sixteen white mice were inoculated intracerebrally or intraperitoneally, two of the ten inoculated intracerebrally died one and twelve days later but showed no lesions in the spinal cord. Three of the six inoculated repeatedly intraperitoneally also died with no demonstrable lesions of the spinal cord. Sixteen chickens of mixed breeds and both sexes were inoculated intracerebrally, paresis of one or both wings with emaciation and general muscular weakness developed in four and death ensued in from seven to fourteen days later. Four animals inoculated intracerebrally with virus after mixture with convalescent immune serum containing antiviral antibody remained perfectly well. Under the circumstances and in view of the symptoms presented by four chickens that died the authors were hopeful of the successful transmission of the virus, but in consultation with Dr Stubbs it was suggested that the illness of these chickens was due to avitaminoses. A repetition of the experiment during which the chickens were kept on a better diet gave completely negative results and in the meantime a careful microscopic examination of the spinal cords of the four chickens revealed no histologic evidences of poliomyelitis. Certain of the s dis

in mice are being continued to determine the possibility of infection of other tissues and especially of the organs of the reticulo-endothelial system

Typhoid Carriers—McBurney states that weekly examinations of the stools of seven typhoid carriers covering fifty-two weeks showed that the number of positive stools among women was 15 per cent higher than among men. There was no correlation among adults referable to age, duration of the carrier state and the percentage of positive stools. The well established positive group was positive 87 per cent of the time. There was practically no negative phase among them. Temperature, humidity, diet, mode of living, minor illness and other factors studied did not alter the carrier state. Increasing temperatures and humidity during the warmer months did not produce a positive phase among the four carriers who had consistently negative stools. For the seven positive carriers there were never more than two negative stools in any one week and not one positive carrier had a negative stool more than two successive times. Of twenty-four weekly fecal specimens from seven well established typhoid carriers, typhoid bacilli averaged 49.45 per cent of the bacterial flora. Considering the results obtained from the whole group studied throughout the year, coupled with the hot room experiments, it seems justifiable to conclude that changes in temperature, humidity, environmental and other factors studied had no effect on periodicity.

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*Dextrose Tolerance in the Aged M D Deren New York—p 1138
Study of Immunity to Staphylococcus Toxin in Albino Rat R H Rigdon Nashville Tenn—p 1141
Guanidine like Substances in Blood I Colorimetric Estimation and Normal Values J E Andes Morgantown W Va and V C Myers, Cleveland—p 1147
Silver Picrate Treatment of Vaginal Trichomoniasis L J Golub and H A Shelanski Philadelphia—p 1155
Effect on Heart of Experimental Pleural Conglutination H M Korns H Landt O R Hyndman R Gregory and C N Cooper, Iowa City—p 1161
Examination of Suspected Semen Stains for Spermatozoa W W Williams Springfield Mass—p 1173
An Improved Stain for Use in Rapid Biopsy Diagnosis A L Barbrow Pittsburgh—p 1175
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Simple Centrifugation Method for Diagnosis of Syphilis F Rytz, Minneapolis—p 1186
Determination of Icteric Index by Acetone Method R A Newburger New York—p 1192
Criticism on Sumner Method for Urine Sugar S Malkiel, Boston—p 1195
Chemical Tests for Diagnosis of Pregnancy I Gersh and J Lewin Denver—p 1197

Toxicity of Fluorine Compounds—Kempf and his associates found that the oral administration of from 0.45 to 4.52 mg of fluorine as sodium fluoride per kilogram of body weight caused no effect on total calcium, acid-soluble inorganic phosphorus, hemoglobin or coagulation time of the blood of the dog. Roentgenograms indicate that there are no changes in the bones of dogs which received 4.52 mg of fluorine as sodium fluoride orally per kilogram of body weight. Alpha fluoronaphthalene produced mottled enamel whereas the ingestion of p , p' difluorodiphenyl, p fluorobenzoic acid and fluorobenzene had no effect on the teeth. Fluorine in water has been lowered by treatment to from 1.5 to 2 parts per million from an original concentration of 8 parts per million. Acidity of the water is a factor in the removal of the fluorine by aluminum sulfate. This is in part due to the nature of the floc produced under different hydrogen ion concentrations. Calcium silicofluoride and cupric fluoride caused mottled enamel, whereas ingestion of aluminum fluoride did not produce this effect. The ingestion of aluminum sulfate, simultaneously with fluorides, prevents, or at least markedly reduces, the effect of fluorine on the teeth.

Dextrose Tolerance in the Aged—Deren studied the dextrose tolerance of fifty subjects more than 55 years of age (free from acute infections, diabetes mellitus and glomerular [hemorrhagic] nephritis) admitted to the hospital for a variety of conditions, particularly, heart disease, osteoarthritis, hypertension and arteriosclerosis. The fifty subjects were divided into equal groups. One group was investigated by the standard method (100 Gm of dextrose after an overnight fast) and the other group by the Eaton-Rose procedure (two 50 Gm doses of dextrose given at an interval of thirty minutes after an overnight fast, abstracted in *THE JOURNAL* Nov 3, 1934, p 1405). The blood sugar was determined by the method of Folin and Wu and the urine sugar by Benedict's method. The results with the standard test indicate that in the aged the fasting blood sugar is normal, the highest being 113.4 mg per hundred cubic centimeters. The peak of the curve is generally delayed, varying from one to two hours. The duration of the curve is prolonged, in most instances exceeding two hours. Sixteen cases with high prolonged, five with prolonged and four with normal blood sugar curves were observed. Urine volumes were small, and in many instances none could be voided throughout the length of the test. In the one hour two-dose dextrose tolerance test the fasting blood sugar levels are comparable to those of the first group. An analysis of these data according to the criteria postulated by Eaton and Rose revealed twenty-one diabetic and four normal types of sugar curves.

Medical Annals of District of Columbia, Washington

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- Chemicobiologic and Clinical Behavior of Arsenoxide (Mapharsen) G B Roth and G W Creswell Washington—p 195
Present Status of Mapharsen in Treatment of Syphilis R L Wells Washington—p 205
Ideal versus Practical Treatment of Early Neurosyphilis R A Vonderlehr and Lida J Usilton Washington—p 209
Syphilis in Medical Clinic G W Creswell Washington—p 216
What the Health Department Is Doing in Prevention and Treatment of Venereal Diseases T C Thompson Washington—p 220
William Alanson White M.D., M.A., D.Sc., LL.D. His Influence on the Medical Profession W J Mallory Washington—p 223

Nebraska State Medical Journal, Lincoln

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- Spirit of Organized Medicine C G Heyd, New York—p 245
Social and Medical Aspects of Venereal Disease Problem in Nebraska P H Bartholomew, Lida J Usilton and R A Vonderlehr Washington D C—p 251
Injection Treatment of Hernia R H Whitham, Lincoln—p 257
Peripheral Vascular Disease VI Raynaud's Disease C W McLaughlin Jr, Omaha—p 261

New England Journal of Medicine, Boston

217 161 198 (July) 1937

- Differential Diagnosis of Jaundice C G Heyd, New York—p 161
Postoperative Parathyroid Tetany N W Swinton, Boston—p 165
A Dietary Study in Rheumatic Fever Sue E Sidow, J P Hubbard and T D Jones Boston—p 170

217 199 240 (Aug 5) 1937

- The Medical Profession C G Heyd, New York—p 199
Studies on Local and Systematic Effects of Acetyl Beta Methylcholine Administered by Iontophoresis L Martin, with assistance of H Ruland and L Ruland, Baltimore—p 202
George Washington Gay Lecture Medical Ethics and the Art and Practice of Medicine L Davis, Boston—p 206
The Management of Gonorrhea V Treatment of Gonorrhea in the Male Details of Procedure Neisserian Medical Society of Massachusetts—p 213
*Treatment of Menopause Syndrome by Irradiation of Pituitary Gland R Zollinger and W W Vaughan, Boston—p 219

Treatment of Menopause by Irradiation of Pituitary—Zollinger and Vaughan employed irradiation of the pituitary body in the treatment of fourteen women who complained of varying degrees of discomfort during the menopause. The majority were having severe symptoms. At least one half of these patients had taken various kinds of ovarian preparations and sedatives with little or no benefit. Most of the patients selected for treatment complained of insomnia because of the hot flashes, accompanied by marked perspiration. The menopause followed surgical castration in seven patients, roentgen therapy in four and application of radium in one and was of natural occurrence in the remaining two cases. The duration of symptoms, before radiation therapy was instituted, varied from two months to eight and one-half years. Of the fourteen

patients treated at least nine months to one year ago, five had a definite and sustained decrease in the number of hot flashes and marked symptomatic improvement, three other patients stated that they were definitely improved, although by tabulation there was little if any change in the number of hot flashes. The remaining patients were not improved subjectively, and the number of hot flashes remained at a preirradiation level. The patients showing definite improvement recorded a fall in the number of hot flashes about the third day of therapy. Although a standard of from 1,400 to 1,600 roentgens was given over a period of four days, this quick response may be taken as an indication that benefit could be expected from smaller doses, such as 800 roentgens. To rule out the psychic effect of x-ray treatment three patients were given sham therapy, two reported a decrease in the intensity of the flashes. Three of the five patients who were definitely improved had had castration by surgery within a year of the onset of treatment. The average age of the improved patients was 36, which is six years below the average for the entire group. Basal metabolic and sugar tolerance determinations were made before and at intervals after the irradiation in order to check any possible damage to the diabetogenic and thyrotropic hormones, but there was no remarkable deviation from the preirradiation studies. In two of the cases there was a slight flattening of the sugar-time curve, which was not extreme enough to be more than coincidental. Biopsies of the vaginal mucosa were obtained in ten patients before and a few weeks after irradiation. The specimens obtained prior to irradiation corresponded in all respects to postmenopausal vaginal mucosa. No definite change after irradiation could be found, even in patients showing marked clinical improvement.

New York State Journal of Medicine, New York

37 1357 1418 (Aug 1) 1937

- Some Notes on Poisoning by Chitocybe Dealbata (Sow.) Var. Sudorifica (Peck) S. E. Jelliffe New York—p 1357
 Nontraumatic Cystoscopy J. B. Clark New York—p 1362
 Protamine Zinc Insulin Clinical Experiences J. F. Hart Bronx—p 1365
 Practical Aspects of Gallbladder Disease J. R. Twiss New York—p 1371
 Methods of Admission and Discharge in New York State Hospitals B. Pollack Rochester—p 1375
 Some Problems in Head Injuries F. Schuck New York—p 1380
 Thevetin in Postoperative Thyroid Crisis and Complicating Bronchopneumonia Case Report L. W. Gorham S. J. Martin C. C. Nuckols and J. C. McClintock Albany—p 1385
 *Peripheral Vascular Disease—Simple External Suction J. Tenopir and B. G. P. Shafiroff Brooklyn—p 1387

Peripheral Vascular Disease—Tenopir and Shafiroff constructed a simple suction device for the treatment of peripheral vascular disease. The apparatus can be easily assembled in any hospital and can be more generally used by the profession with the knowledge that the same physiologic benefits can be obtained as with a commercial pattern. It consists of the regular portable suction machine used for surgical aspiration connected to an airtight chamber or boot by rubber tubing. Before the extremity is inserted into the boot, a properly fitting nonconstricting rubber tube encircles the leg or thigh. These tubes resemble in appearance the inner tube of an automobile tire and are of various sizes. The extremity encircled by its inflated tube seals the proximal end. The outlet on the boot is connected to the suction machine by pressure tubing. The button on the suction base permits the patient to start and stop the negative pressure when the treatment period is ended or the sensation of pain is present. Treatments are given at minus 30 to minus 50 mm. of mercury maintained continuously for from one-half to two hours, according to the patient's tolerance. It is possible to use suction at a continuous constant negative pressure by inserting small objects between the tube around the leg and the outside to permit a small air leakage. The clinical results are a confirmation of the beneficial effects reported by other workers with the passive vascular exercise machine. Relief from pain was noted in twelve of the sixteen cases treated by this method. Three of Buerger's disease, twelve of diabetic arteriosclerosis and one of severe frostbite of the lower extremities. Capillary ecchymosis directly due to suction developed in one case. Two cases of gangrenous toes, in which amputation was considered, healed completely. Six arteriosclerotic patients reported relief from pain and improvement in

walking distance. The case of frostbite responded well to suction by improvement in skin texture and relief from persistent coldness of the feet, cessation of pain while walking was also experienced. No other treatment was used in any of these cases during the course of suction therapy.

Psychoanalytic Quarterly, Albany, N. Y.

6 275 382 (July) 1937

- Intelligence and Higher Mental Functions W. Bischler, Geneva, Switzerland—p 277
 Psychoanalysis in Late Life Depressions M. R. Kaufman, Boston—p 308
 Resolution by Psychoanalysis of Motor Disturbances in an Adolescent M. Levy Suhl, Amersfoort, Holland—p 336
 Contribution to the Psychology of Menstruation M. Balint, Budapest, Hungary—p 346
 Escape into Reality Clinical Note on Spontaneous Social Recovery B. S. Robbins, New York—p 353

Public Health Reports, Washington, D. C.

52 1105 1134 (Aug 13) 1937

- Occurrence in Serums of Man and Monkeys of Protective Antibodies Against the Virus of Lymphocytic Choriomeningitis as Determined by Serum Virus Protection Test in Mice J. G. Wooley, C. Armstrong and R. H. Onstott—p 1105
 Note on Comparative Tests Made with Hatch and Greenburg Smith Impingers J. M. DallaValle—p 1114
 Simple Equipment for Removing Channel Obstructions R. E. Dorer—p 1118

South Carolina Medical Assn. Journal, Greenville

33 185 206 (Aug) 1937

- Syphilis Control in South Carolina J. E. Boone, Columbia—p 185
 Some Observations on Errors Made in Diagnosis and Management of Ear, Nose and Throat Conditions J. W. Jervey, Jr., Greenville—p 189

Tennessee State Medical Assn. Journal, Nashville

30 273 312 (Aug) 1937

- Treatment of Fractures of Face R. Patterson, Knoxville—p 273
 Fractures—Few Basic Principles of Treatment R. C. Robertson, Chattanooga—p 280
 Obstetric Jurisprudence H. P. Hewitt, Chattanooga—p 286
 Surgical Treatment of Certain Types of Heart Disease A. Blalock and T. R. Harrison, Nashville—p 292

Texas State Journal of Medicine, Fort Worth

33 281 344 (Aug) 1937

- Surgical Management of Vesicovaginal Fistulas V. S. Counsellor, Rochester, Minn.—p 288
 Clinical and Pathologic Features of Tumors Occurring in the Region of the Apex of Lung J. J. Stein, Hines, Ill.—p 295
 Injection Treatment of Hernia H. Seale, Cisco—p 299
 *Epilepsy, Its Surgical Aspects—Results Following Air Injection J. T. Gilbert, Austin—p 301
 Cyclopropane Anesthesia Based on Its Use in 732 Cases R. F. Bonham, Houston—p 306
 Systemic Cryptococcosis with Report of Case (So-Called Tortula Histolytica Infection) G. T. Caldwell, Dallas—p 310
 Serum Sensitivity J. H. Black, Dallas—p 316
 Surgical and Orthopedic Treatment of Concomitant Convergent Strabismus R. K. Dally, Houston—p 320
 Primary Lymphosarcoma of the Stomach Report of Case D. R. Venable, Wichita Falls—p 327

Surgical Aspects of Epilepsy—Gilbert points out that by far the greatest benefits that epileptic patients derive from surgery are those offered by neurosurgery in the removal of tumors. Many feel that, in the epilepsy due to trauma, surgery has distinct benefits that it can offer. Foerster and Penfield have shown that, in many instances wherein injury has occurred, extensive cerebral scars exist. The injury-induced epileptic attack begins after a rather long period of time has elapsed from the date of injury, suggesting that the slow contraction of the scar was responsible. The treatment suggested is the removal of the overlying scar tissue, the identification by faradic current of the part of the cortex governing movements in the extremity wherein the attack arises and the radical excision of that portion of the cerebral cortex. Favorable results are reported by these and others doing this operation. Contrary to popular opinion, permanent paralysis does not follow this operation—the temporary paralysis in most instances gives way to almost complete return to normal. The treatment of Jacksonian epilepsy due to trauma or atrophy by means of alcoholic injection into or electrical coagulation of the trigger-zone portion of the cortex has been reported with favorable results by Fincher and Dowman. Several cases of

pancreatic adenoma have been reported in which the hypoglycemia produced by such a growth was followed by epileptic attacks. Surgical removal of such adenomas was followed by alleviation of these attacks. So-called essential epilepsy and surgical measures suggested for its control are considered. These include in operation which mobilizes the transverse sinus where the anomalous development has been identified, bilateral adrenal denervation and injection of air. Three cases with epilepsy as part of their complaint are reported in which injection of air was beneficial.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

31 117 260 (July) 1937 Partial Index

- Peculiarities of Tuberculosis Problem in India C A Sprawson — p 128
Tuberculosis in Native Employees of Gold Mining Industry (Rand) A D Pringle — p 136
Tuberculosis and the Empire S Lyle Cummins — p 140
Care and After Care of Tuberculous Among the European Mining Population of the Rand A D Pringle — p 144
Tuberculosis and City Environment T Herz — p 154
Environmental Factors in Care and After Care P Varrier Jones — p 157
Tuberculosis Activities in Canada R J Collins — p 169
Function of Hospital in Tuberculosis Problem L S T Burrell — p 181
Place of Occupational Therapy in Treatment of Tuberculosis Gloria Langmaid — p 199
Resettlement of the Tuberculous Ex-Serviceman J B McDougall — p 202

British Medical Journal, London

2 101 150 (July 17) 1937

- *Prontosil in Treatment of Erysipelas Controlled Series of 312 Cases W R Snodgrass and T Anderson — p 101
*Agranulocytosis and Para Aminobenzenesulfonamide C J Young — p 105
Food Poisoning Its Epidemiology and Bacteriology E R Jones — p 106
Sodium Chloride Content of Cerebrospinal Fluid in Tuberculous Meningitis J Ingham — p 111
Effect of Heat and Ultraviolet Radiation on Iso Agglutinins in Dried Blood Stains A I Kassis and W G Miller — p 114

Sulfanilamide in Treatment of Erysipelas—Snodgrass and Anderson treated 312 cases of erysipelas under controlled conditions with ultraviolet radiation sulfanilamide ultraviolet radiation and sulfanilamide or scarlet fever antitoxin. There was an even distribution of the individual cases in the treatment groups in respect of factors known to influence the course of the disease, the duration of the disease before admission to the hospital, the age of the patient, the severity of the infection and associated diseases. The average case dosage of sulfanilamide was 5 Gm and the average duration of treatment was two days. Treatment was given during the acute stage only and was not maintained after the subsidence of the local lesion and the cessation of fever and toxemia. Cases in which sulfanilamide was employed showed better results in respect to the duration of the spread of the local lesion, the duration of primary pyrexia and the duration of toxemia. The benefits due to sulfanilamide in erysipelas are statistically assessable and are great enough to render its use advisable until some better form of treatment is available. The action cannot on the whole be termed dramatic.

Agranulocytosis and Sulfanilamide—A consideration of the formula of sulfanilamide suggested to Young the possibility that this drug might be capable of producing agranulocytosis. It was decided to make observations on the leukocytes in sulfanilamide-treated patients. Complete agranulocytosis with fatal result occurred in the second case investigated. While the possibilities are obvious, it naturally cannot be determined whether this occurrence was or was not due only to the administration of the drug. The patient was a man of 53 suffering from acute rheumatism with pains of the joints and pyrexia. There was a history of previous attacks in 1901, 1908 and 1914. The condition failed to respond to salicylates, and sulfanilamide (3 Gm daily for eighteen days) was given. At the end of this period the clinical condition had deteriorated, the temperature running at a higher level than before and treat-

ment was stopped. Four days afterward complete agranulocytosis was found, and culture of the blood, which had given no growth three weeks previously, now gave hemolytic Staphylococcus aureus and Streptococcus viridans. The patient died on the following day. Cases of agranulocytosis have been recorded in which no drugs appear to have been taken and no obvious cause could be found, so that a definite conclusion with regard to the causation in the present case is not justified. The only drug of the benzene ring administered within twenty-four days of the development of agranulocytosis was sulfanilamide. The agranulocytosis appeared to be either of the idiopathic type of unknown etiology or to be due to sulfanilamide.

East African Medical Journal, Nairobi

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- Kikuyu Diet T F Anderson — p 120
A Portable Sterm Disinfector R E Barrett — p 132
Morbid Adhesion of Placenta in Native (Mitata) Woman Case P G Preston — p 134
Mitral Stenosis in Native Girl Case F J Wright — p 137

Indian Medical Gazette, Calcutta

72 393 456 (July) 1937

- Teleroentgenography of the Heart in Epidemic Dropsy R N Chopra
R N Chaudhuri and P C Sen Gupta — p 393
Endemic Fluorosis in Nellore District of South India H E Shortt
C G Pandit and T N S Raghavachari — p 396
Effects of Injections of Milk Preparations in Leprosy S Lal Sarkar
and B Madhab Bhattacharya — p 398
Cholera in Kashmir in 1935 with Especial Reference to Certain Aspects of Value of Protective Inoculation G M Millar and G Mohi ud din — p 402
Results of Splenectomy for Tropical Splenomegaly Analysis of Thirty Three Cases A N Palit — p 403
Sodium Evipan Anesthesia A C Dey — p 408
Short Note on Diagnosis of Pulmonary Tuberculosis D R Dhar — p 409
Acute Inflammation of Attic It. Diagnosis and Treatment A Rashid — p 410

International Journal of Psycho-Analysis, London

18 125 372 (April/July) 1937

- Theory of Therapeutic Results of Psychoanalysis I E Clover — p 125
Id II O Fenichel — p 133
Id III J Strachey — p 139
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Id VII E Bibring — p 170
Unconscious Functions of Education E Glover — p 190
Further Observations on Clinical Picture of Psychogenic Oral Aspermia E Bergler — p 196
Duration of Coitus G Bose — p 235
Affects in Theory and Practice Marjorie Brierley — p 236
On Introjection S H Fuchs — p 269
Dream Symbolism of Analytic Situation M Steiner — p 294

Journal of Physiology, London

90 113 256 (July 15) 1937

- Secretory Response of Posterior Pituitary to Need for Water Conservation A Gilman and L Goodman — p 113
Maintenance of Ovarian and Luteal Function in Hypophysectomized Rabbit by Gonadotropic Hormones J M Robson — p 125
Maintenance of Pregnancy and of Luteal Function in Hypophysectomized Rabbit J M Robson — p 145
Distribution of Chloride in Frog's Skeletal Muscle Immersed in Saline Solution M Grace Eggleton P Eggleton and A M Hamilton — p 167
Evidence for Electrical Transmission in Nerve Part I A L Hodgkin — p 183
Id Part II A L Hodgkin — p 211
Action Potentials Recorded from Unstriated Muscle of Simple Structure C M Fletcher — p 233
Vomiting Produced in the Cat by Ligation of Mesenteric Vein K J Franklin and A D McLachlin — p 254

Lancet, London

2 239 300 (July 31) 1937

- Arterial Pulse in Health and Disease C Bramwell — p 239
Alkalosis with Disordered Kidney Functions Observations on Case R A McCance and E M Widdowson — p 247
Dacryocystorhinostomy R E Wright — p 250
Relation of Vitamin E to Anterior Lobe of Pituitary Gland M M O Barrie — p 251
*Extreme Degree of Leukocytosis in Whooping Cough W J Pearson and G H News — p 254

Extreme Leukocytosis in Whooping Cough—Pearson and News cite a case of whooping cough with a high leukocyte count (145,000 per cubic millimeter) and a relative increase in the lymphocytes. This feature of the blood picture is therefore much more valuable diagnostically than either the propor-

tion of lymphocytes or the level of the leukocyte count. Unlike those in lymphatic leukemia, these were mature in form. Such high counts are extremely rare and seem to be associated with a complicating bronchopneumonia. In the present case there is little evidence that it has influenced the blood picture.

Journal de Medecine de Bordeaux et du Sud-Ouest

114 121 180 (Aug 7 14) 1937

Erythrodermia Desquamativa Boissier Lacroix—p 121

*Meningeal Hemorrhage of the New Born M Riviere—p 129

Subarachnoid Meningeal Hemorrhages of Children (Except the New Born) M Traissac—p 145

Meningeal Hemorrhages of the New-Born—Riviere discusses the meningeal and ventricular hemorrhages which, because of their anatomic importance, may give rise to clinical symptoms. He disregards the microscopic meningeal hemorrhages, which according to Tassovatz occur in ninety-five out of 100 normal deliveries. The incidence of meningeal hemorrhages that cause clinical symptoms has been estimated differently by various authors. Whereas Waitz judged them to be 11 per hundred, Tassovatz estimated them at 0.05 per hundred. In summarizing his observations the author says that their incidence may be fixed at about 1 in 100 cases. Their etiology is dominated on the one hand by syphilis and prematurity, often concurring, and on the other hand by obstetric traumatism. The etiologic responsibility is about equally divided between the predisposing factors (syphilis and prematurity) and the trauma. There are four chief mechanisms: (1) intracranial venous hypertension of circulatory origin, (2) sudden thrusts of the cerebrospinal fluid in the arachnoid spaces, (3) ruptured vessels in the cerebellar tentorium and (4) in exceptional cases direct vascular lesions by pieces of bone. The symptomatology differs according to circumstances. There may be real or apparent death or atypical symptoms of muscular hypertension with attacks and clonic convulsions. The cortical and bulbar centers may be inhibited or irritated by a subdural hematoma. The ventricular hemorrhages become manifest by stupor, the signs of cortical irritation do not appear until later. The clinical diagnosis can always be corroborated by lumbar, suboccipital or ventricular puncture. The immediate prognosis is grave in that the mortality exceeds 35 per cent. The late prognosis is indefinite if suitable treatment has not been employed, for a large number of encephalopathies derive from intrapartum meningeal hemorrhages. The prophylactic treatment should ameliorate the predisposing factors by combating syphilis and prematurity and should make efforts to reduce or suppress the obstetric traumatism by careful choice of the interventions. The curative treatment should decompress the centers by lumbar, suboccipital or ventricular punctures. They should be repeated as often as signs of intracranial hypertension exist. Hemostasis is produced by assuring the normal play of respiration and by injections of hemostatic serum or of maternal blood. This treatment, which relieves the cortex of the compressive and destructive action of the subdural hematoma, seems to improve greatly the late prognosis of the meningeal hemorrhages of the new-born.

Journal de Medecine de Lyon

18 423 446 (Aug 5) 1937

*Tuberculous Tracheobronchial Adenopathy with Rapid Progress in Young Adults C Roubier—p 423
Frequency and Dangers of Unrecognized Foreign Body of Respiratory Tract P Mounier Kuhn—p 435

Tuberculous Tracheobronchial Adenopathy in Young Adults—Roubier says that all authors agree that tuberculous tracheobronchial adenopathy is a rarity in adults in France. Whereas in young children the involvement of the lymph nodes often predominates over the pulmonary lesion, in adults it is usually the adenopathy, which is insignificant compared to the pulmonary lesion. To be sure, there are exceptions to this general rule, for instance, in young adults one may observe, although rarely, adenopathies that consist of enormous caseous masses in the mediastinal lymph nodes and in those around the pulmonary hilus, much like those that are observed in young children. In this paper the author describes the clinical history of a young adult, aged 19 years, who had tuberculosis of the lymph nodes. The process, the total duration of which did not exceed eight months, evolved in three periods. During the

first period there existed an adenopathy of the lymph nodes of the left pulmonary hilus. This process was accompanied by continuous fever. During the second period the tuberculosis extended to other groups of lymph nodes. During the third the terminal, period the lung became involved. On the basis of serial roentgenologic examinations and of the necroptic observations, the author concludes that the primary tuberculous process was in the lymph nodes and that the lung became involved only secondarily. He points out that this is a case of primary tuberculous infection of an adult which is comparable in all points with those which during the World War were often observed in the representatives of the primitive races, particularly the Senegalese.

Presse Medicale, Paris

45 1179 1186 (Aug 14) 1937

*Oral Administration of Ouabain in Treatment of Cardiac Insufficiency S Livieratos and N Kisthinos—p 1178
Surgical Organization of Hospitals and Operative Blocks. G Renon—p 1180

Oral Administration of Ouabain in Cardiac Insufficiency—Livieratos and Kisthinos point out that the administration of ouabain by the oral route was already recommended by Vaquez but that later it was abandoned in favor of the intravenous injection. After remarks about the intramuscular injection in which they mention the toxic effects on the muscle, they give their attention to the oral administration, citing the experimental studies of Dimitracoff and others, which proved that the oral administration of strong doses produces results that are comparable to those of intravenous injection and that this mode of administration should be resorted to whenever the intravenous administration is impossible, such as in the treatment of cardiac insufficiency. On the basis of these observations, the authors decided to try the oral administration of ouabain in advanced cases of cardiac insufficiency, to replace the formerly employed intravenous injection of the substance. In about twenty cases they used a 2 per cent solution of ouabain, giving from 20 to 25 drops twice a day, in the morning before breakfast and in the evening before retiring. The patients tolerated these doses well and the condition commenced to improve on the following day. Although stronger doses have been recommended by some authors and in the literature accompanying the preparation, the authors warn against larger doses, since they may provoke undesirable complications without being more efficacious against the cardiac insufficiency. The indications for the oral administration of ouabain are the same as those for the intravenous injection, except in the urgent cases, in which nothing can replace the intravenous injection. To be sure, the oral administration of ouabain is not an infallible method, for there are cases in which it fails. If, after two or three days of oral medication, the desired improvement has not been obtained, the intravenous method should be instituted without further delay.

Dermosiflografo, Turin

12 273 300 (July) 1937

*Death from Application of Salicylic Acid Salve Case G Sannicandro—p 273
Cutaneous Gangrene of Streptococcal Origin Experimental Study of Case L Peruccio—p 282
Nonvenereal Diseases of Genitalia Cases C Pisacane—p 286

Death from Application of Salicylic Acid Ointment—According to Sannicandro, the skin of children is extremely sensitive to the application of preparations containing salicylic acid. He reports the case of a child, aged 7 years, who entered the clinic in excellent health except for the fact that he was suffering from benign psoriasis at the trunk, knees and elbows. An ointment containing 5 per cent salicylic acid was applied to the psoriatic areas of the skin. The patient was placed in bed covered with impermeable sheets. Twelve hours later he showed a grave condition with intense vomiting, fever, nervous symptoms, hyperdyspnea, acidosis and coma. Tests showed that there was salicylic acid in the urine and cerebrospinal fluid. The amount of sugar in the blood was normal. All treatments failed. Death occurred forty hours after application of the ointment. At necropsy it was found that the skin, both psoriatic and normal, was the seat of a swelling process which explained the exaggerated passage of the acid to the body.

The brain and viscera, especially the liver and kidney, were the seat of vascular congestion and tumefaction. The author points out the danger of applying salicylic acid preparations to children. He also points out the fact that the therapeutic dose of salicylic acid in adults varies with the individual, according to the presence or absence of a congenital or acquired sensitivity.

Polichinco, Rome

44 1593 1636 (Aug 23) 1937 Practical Section

- *Bactericidal Power of Gastric Juice Relation Between Acidity and Bactericidal Power of Gastric Juice A Sebastianelli—p 1593
Blood Transfusion in Clinical Medicine M Lusner—p 1602

Bactericidal Power of Gastric Juice—Sebastianelli studied the relation between gastric acidity and the bactericidal power of the gastric juice. His researches were carried out for three consecutive years on several thousand specimens of gastric juice in normal or in pathologic conditions. The juice was withdrawn in all cases from fasting stomachs immediately before and for two hours after administration of a broth meal. In all cases the gastric juice was neutralized if it was not neutral. The bactericidal power of the juice was determined by the action of the latter on a 1:250,000 solution of a twenty-four hour bouillon culture of colon bacilli *in vitro*. According to the author, there are two types of bactericidal power of the gastric juice. The first type is a property of the juice. It is independent of the antiseptic properties and production of the gastric hydrochloric secretion. It depends neither on the intensity of free and total acidity nor on the presence of a normal gastric secreting reaction to a standard stimulus. The second type of bactericidal power of the gastric juice is related to the intensity of gastric acidity. It is of less importance than the proper bactericidal power of the gastric juice. In the absence of the latter, an intense acidity of the juice is necessary for the maintenance of sterility. An intense acidity of the gastric juice in fasting stomachs is found only in exceptionally rare cases (31 per cent, according to the statements of the author). In these cases the relative bactericidal power causes the same effects on bacteria as those caused by the proper bactericidal power of the gastric juice.

Prensa Medica Argentina, Buenos Aires

24 1599 1642 (Aug 18) 1937

- Pseudotumoral Lymph Granuloma of Pharyngeal Cavity D Brichetto Brian and P B A Viglino—p 1599
Rheumatism and Rheumatic Patients M J Barilari and M Castillo—p 1603
Total Thyroidectomy in Irreducible Heart Insufficiency Teresa Malamud B Jussem and Berta Stepanowsky—p 1613
*Arterial Hypertension Treatment by Diathermy of Carotid Sinus R Gorlero Pizarro and P Levisman—p 1625
Treatment of Heine Medin Disease V C Girardi—p 1628

Diathermy in Arterial Hypertension—Gorlero Pizarro and Levisman resorted to diathermy of the carotid sinus in the treatment of arterial hypertension. Patients who improved by rest were excluded. Diathermy was administered by means of an apparatus which consisted of two common electrodes 8 cm long and 2.5 cm wide (positive poles) and a common diathermy square plate of 12 cm (negative pole). The electrodes were placed at the carotid region, whereas the plate was placed at the pectoral region. The diathermic applications were given every other day to patients with a fasting stomach. The first application lasted ten minutes. The duration of the following applications was increased by five minutes for each application up to a duration of thirty minutes. The treatment consisted of six or seven sittings. The group was made up of forty patients. Thirty patients suffered from essential hypertension. The other ten had arterial hypertension from nephrosclerosis. The thirty patients suffering from essential hypertension were relieved from headache and dizziness and became euphoric. The blood pressure, maximal and minimal, was lowered 2, 3 or 4 cm in twenty patients of the group and hypertension did not change in ten patients. In the group of ten patients who were suffering from hypertension and nephrosclerosis the treatment modified neither the symptoms nor the blood pressure. The treatment is harmless. According to the authors, the factors that induce lowering of essential hypertension are sympathetic reflexes and dilatation of the arteries and veins induced by diathermy of the carotid sinus.

Beitrage zur Klinik der Tuberkulose, Berlin

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- Anatomy of Tuberculosis in Connection with Epidemiology Geographic Pathologic Investigation M Straub—p 1
*Significance of Arterial Oxygen Deficit in Pulmonary Tuberculosis for Dosage of Therapeutic Collapse W Vorwerk—p 87
Method of Functional Analysis of Respiration and Circulation G Zieper—p 115
*Question of Successive Exacerbations in Miliary Tuberculosis H H Loeschke—p 154
What Is Meant by Catarrh of Pulmonary Apex? Pathologic Anatomy Roentgen Pathology and Differential Diagnosis of Tuberculosis of Pulmonary Apex S Puder—p 168
Observations on Infectiousness of Erythema Nodosum M Haidvogel—p 186
Treatment of Tuberculosis of Mucous Membrane by Carbon Dioxide Snow H Eschweiler—p 189

Arterial Oxygen Deficit and Pulmonary Collapse—Vorwerk says that in most instances the clinical and roentgenologic aspects determine the desirable degree of pulmonary collapse. However, it is difficult to recognize whether the extent of the pulmonary collapse impairs the adequate arterialization of the blood. Increase of the collapse beyond a certain point reduces the favorable therapeutic effect of pneumothorax and other collapse measures. In this connection the author calls attention to anoxic stimulation of the respiration and many other unfavorable effects of arterial oxygen deficits. Whether arterialization of the blood is complete or not can best be determined by spirometry. The author reports his observations with spirometry in 100 patients. He tested the arterial saturation by means of the closed gas exchange system of Knipping, in which the patients are changed from the breathing of air to the inspiration of oxygen so that they are not aware of it. Toward the end of the inhalation of oxygen, the vital capacity and the respiratory limits are determined. Spirometry was done chiefly in patients who readily developed dyspnea or in those in whom both sides of the lung were involved or in those in whom collapse therapy was done. Several patients were examined before and after an artificial pneumothorax was made. Some patients with bilateral pneumothorax were examined immediately after the filling. The author gives a tabular report of the results of the tests and discusses some of the characteristic cases. He shows that even in normal subjects there may be slight arterial deficits during rest. However, because it is so slight, this normal deficit may be disregarded in the tests. In one of the cases which the author discusses in detail it is shown that the filling of the pneumothorax was not excessive but that the patient required rest, for even slight exertion resulted in incomplete arterialization. He also found that phrenic exeresis is unfavorable from the point of view of respiratory function and arterialization. Whereas the diseased lung is only slightly collapsed, the immobilization is doubtless more complete than is the case in pneumothorax. The blood perfusion of the immobilized side is not greatly restricted. If the other side of the lung is entirely normal, the arterialization is hardly impaired. However, if the other side of the lung becomes involved in the tuberculous process or a pleurisy develops, the greater immobilization with the lesser ventilation on the side on which the diaphragm has been paralyzed may have undesirable results. Moreover, it is inadvisable to combine unilateral phrenic exeresis with pneumothorax on the other side, for even if the pneumothorax is small the limits of the necessary ventilation are readily surpassed. For these reasons the author advises that phrenic exeresis be used more sparingly and that temporary crushing of the nerve be employed instead.

Successive Exacerbations in Miliary Tuberculosis—Loeschke says that various clinical manifestations, particularly ophthalmoscopic observations and the fever curve, seem to indicate that miliary tuberculosis develops in successive crops. It was his aim to determine these successive exacerbations in pathologic-anatomic studies on cadavers and then to attempt to find them in the clinical histories. The similarity of two tubercles does not necessarily imply the same age. The degree of caseation seems to be more or less dependent on the age; however, newly caseating homogeneously appearing foci differ from old, friable caseations. Not every tubercle goes through all the stages of development, for instance, a predominantly fibrous tubercle may later again become exudative.

A direct comparison between the foci in different organs is likewise not permissible, for there doubtless exists in tuberculosis a more or less pronounced organic predisposition, the liver has a tendency to develop productive foci, whereas the adrenals are predisposed to caseation. Nevertheless, in organs of the same circulatory region, such as liver and spleen, a certain uniformity can be observed. If different types of foci are discovered in the lung and in the sphere of the systemic circulation, this does not necessarily imply different ages of the foci, for the doses of bacteria differ widely in both cases. In the lung, the possibility of bronchogenic older disseminations must be considered, only if the dissemination of the older foci is quite uniform can it be assumed that they are of hematogenous origin. For this reason the foci in other organs are of greater value for the detection of successive crops than are those in the lung. Among fourteen cases of generalized, hematogenous tuberculosis, the author found five in which traces of older hematogenous crops could be found. These older disseminations had taken place months or even years before. In the course of milary tuberculosis, successive crops may be determined by ophthalmoscopic observations. However, these cannot be definitely differentiated in the histologic picture. In some of the cases it was clear that the disseminations were of short duration. It seems that for the development of a milary tuberculosis not only the large bacterial dose is important but also the sudden and simultaneous dissemination of toxins that impair the capillary walls and thereby favor the dissemination in the tissues.

Strahlentherapie, Berlin

59 383 562 (July 21) 1937 Partial Index

- Intensol Lamp S Lomholt—p 383
 *Experimental Investigation on Prospects of Gonorrhea Therapy with Alpha Rays H Nagell and W Noethling—p 419
 Radiotherapeutic Experiences in Malignant Tumors of Upper Air and Food Passages with Metastases in Regional Lymph Nodes A Pagani—p 441
 Diagnosis and Therapy of Tuberculosis of Female Genitalia F Gal—p 513
 *Lesions Caused by Bucky's Irradiations F Kalz—p 547
 Mode of Development of Necrotic Roentgen Ulcer B Dahl—p 552

Prospects of Gonorrhea Therapy with Alpha Rays—To determine whether the application of the bactericidal alpha radiation has prospects of success in the treatment of acute gonorrhea, Nagell and Noethling investigated what quantities of alpha rays are necessary for the killing of gonococci in vitro. They found that in case of unilateral irradiation of surface cultures from 4 to 60 alpha particles have to be applied to each square micron. In case of fluid mediums and irradiation from all sides it is necessary that each cubic micron of culture medium absorb from 0.01 to 0.4 alpha particles. If about 6 per cent of an alpha particle is absorbed per cubic micron it may be expected that 80 per cent of the organisms are killed. If thorium X solutions are employed, slightly higher values are found. The authors conclude that ointments which contain from 0.02 to 0.2 millicurie of radon per cubic centimeter should produce some practical results, provided they act several hours each day.

Lesions Caused by Bucky's Irradiations—Kalz shows that the original contention of Bucky, that severe cutaneous injuries are impossible in the treatment with the extremely soft rays, has only been partly realized. To be sure, there are no severe cutaneous injuries, like roentgen ulcers, but mild atrophies have been observed repeatedly. These atrophies may be accompanied by pigmented spots or by vitiligo-like loss of pigmentation or by telangiectases. The clinical aspects vary according to the quality and quantity of rays and according to the localization. The author reports several cases of his own observation. In two cases in which irradiations were applied for naevus flammeus, telangiectases developed. Irradiation of a carcinoma was followed by thinning of the skin and depigmentation. The appearance of lentigo-like pigmentation seems to involve a predisposition, for the author observed it in a boy in whom comparatively mild doses had been applied to a naevus flammeus. On the basis of these and other observations the author concludes that in borderline rays, as in the harder roentgen rays, the dosage must be carefully watched. Depending on the quality of the rays and the localization, certain doses cannot be exceeded if impairments are to be avoided.

Wiener Archiv fur innere Medizin, Vienna

31 181 (July 31) 1937

- *Elimination of Vitamin A in Urine R Boller, O Brunner and E Brodaty—p 1
 *Behavior of Blood Sugar and of Blood Cholesterol After Resection of Thyroid A Atnan, E Fenz and K. Uiberrak—p 23
 Automatism with Changing Emerson Block and Transition into Bigeminy C Bloch and F Fischer—p 33

Vitamin A in Urine a Prognostic Sign—Boller and his associates studied in 321 patients with various disorders the vitamin A elimination in the urine before and after parenteral tolerance tests with a vitamin A preparation. The reactions were nearly always the same before and after the vitamin A tolerance test. It may be assumed that the parenteral administration is necessary only in rare cases, namely, when food is refused or when disturbances in the intestinal resorption may be assumed. Vitamin A is found in the urine in case of icterus with complete closure of the bile duct, in chronic nephritis and nephrosis and in lobar pneumonias before the critical defervescence. In severe cases of hepatic cirrhosis the urine always gives a positive vitamin A reaction, however, it is impossible as yet to detect a definite relationship between the severity of the disorder and the elimination of vitamin A in the urine. The authors assume that vitamin A is eliminated in the urine when both liver and kidney are impaired or when the impairment of one of these organs is so considerable that the other organ becomes likewise involved. By the administration of aminopyrine it is possible to reduce the elimination of large amounts of vitamin A in the urine or completely stop the elimination of small amounts. The determination of the elimination of vitamin A in the urine is of diagnostic value in hepatic and renal diseases. Regarding the prognostic value of the test, the authors say that, on the basis of their experiences, the elimination of vitamin A in the urine must always be regarded as an extremely serious sign.

Sugar and Cholesterol in Blood After Resection of Thyroid—Atnan and his collaborators found that after operations on the thyroid the postoperative increase in the blood sugar (in contradistinction to the majority of operations in other locations) takes a peculiar course. The hyperglycemia decreases, not as otherwise after from three to five hours, but shows a tendency to remain increased for a considerable period (frequently for twenty-four hours) or to increase again repeatedly. This characteristic behavior is dependent neither on the type of the anesthesia nor on the type of the thyroid disorder. It is assumed that the prolonged hyperglycemia might be explained as the result of the surgical trauma, by which large amounts of thyroid secretion are probably forced into the blood, and the peculiar increase in temperature, frequent perspiration, tremor and tachycardia may be due to this same factor. The result of studies on the cholesterol content of the blood before and after the operation seems to confirm this assumption. It was found that after operations on the thyroid the cholesterol content of the blood decreased much more than after other operations. The iodine content of the blood was determined in two cases after a surgical intervention on the thyroid and it was found that the values had almost doubled. The authors think that this too seems to indicate a postoperative increase in thyroid secretion following operations on the thyroid.

Hospitalstidende, Copenhagen

50 741 816 (July 6) 1937 Partial Index.

- Continued Experiences with Sulfur Oil (Sulfosin) Treatment. E. Schroeder—p 744
 Rectal Cancer Treated with Radical Operation at Odense County and Town Hospital from 1922 to 1936. Cases S Muller—p 768
 Some Experiences with Local Light Treatment of Lupus Vulgaris P. Jacoby—p 771
 Significance of Roentgenography of Ankle Joint in Oblique Projection in Malleolar Fractures E. Husfeldt—p 788
 Weil's Disease. Case with Anuria. Gerda Brilmann—p 797
 Pulmonary Actinomycosis. Three Cases K. Spindergaard—p 801
 *Sedimentation Reaction in Different Forms of Cancer Especially with Regard to Its Prognostic Value. I. Cancer of Breast. P. Jacoby and J. Spotoft—p 811

Prognostic Value of Sedimentation Reaction in Cancer—Jacoby and Spotoft conclude that, if after treatment of cancer of the breast control examinations constantly disclose an increased sedimentation reaction, there is great probability of occult metastases and that these increased sedimentation values are an unfavorable sign.

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PRESENT-DAY STATUS OF THE TREATMENT OF NEUROSYPHILIS

CHAIRMAN'S ADDRESS

PAUL A O'LEARY, M D

ROCHESTER, MINN

The treatment of syphilis of the central nervous system is still in a developmental phase. We have passed through the trial era of specific treatment and have now had sufficient experience with nonspecific measures to crystallize our concepts of their therapeutic value. In appraising the results of treatment I have followed the classification of neurosyphilis (given in the accompanying table) adopted by the Committee on Nonspecific Therapy of Neurosyphilis.¹

ASYMPTOMATIC NEUROSYPHILIS

The report² of the Cooperative Clinical Group shows that the results of treatment of asymptomatic neurosyphilis are less encouraging than the reviews of smaller groups of cases had indicated. The survey indicates that the results of treatment are dependent on the severity of the spinal fluid reaction as well as on the type and amount of treatment administered after the diagnosis of asymptomatic neurosyphilis has been made.

The incidence of asymptomatic neurosyphilis is twice as common in early as in late syphilis (24.5 per cent versus 12 per cent in white adults), and the response to treatment is, on the whole, more satisfactory in the early groups because the majority of the patients manifest the less malignant types of spinal fluid. The use of combined³ treatment reversed to negative the milder

types of positive spinal fluids in 84 per cent of the cases, while in only 45 per cent of the cases in which the condition was of severe grade (paretic formula) did the spinal fluid become negative.

When the results were appraised according to the system of treatment employed, it was found that the routine use of arsphenamine, bismuth compounds and mercury reversed 75 per cent of the spinal fluids to negative and that these remained negative for ten years after treatment. When the routine treatment was augmented by intraspinal therapy in the resistant cases 74 per cent of the spinal fluids were still negative ten years after treatment. The use of routine therapy and tryparsamide caused a reversal to negative in 68 per cent of the spinal fluids in a similar group in which routine treatment alone had failed. After a period of observation of ten years these spinal fluid reactions were still negative for evidence of syphilis. Malaria therapy when given to a group of patients in treatment of whom chemotherapeutic measures had failed, resulted in negative reactions in the spinal fluid in 26.5 per cent of the cases, these negative reactions were maintained for ten years.

When the 565 cases of asymptomatic neurosyphilis were grouped together and all measures of treatment were appraised, it was found that satisfactory serologic reversal was produced and maintained in 64.4 per cent of the cases. Clinical progression was noted in 6 per cent of the cases of this type of neurosyphilis even though treatment with all of the various modalities was continued. Simpson⁴ reported that combined artificial fever and chemotherapy reversed the serologic characteristics of the spinal fluid in six of the seven cases of asymptomatic neurosyphilis in which he administered treatment and which he observed for two years.

MENINGEAL NEUROSYPHILIS

The results from the treatment of a large group of patients with meningeal neurosyphilis have not as yet been subjected to detailed study. The reports in this country, by Moore⁵ and by Stokes,⁶ show that clinical improvement occurs in from 80 to 85 per cent of cases. The majority of these patients show a satisfactory response to the routine types of treatment because the clinical response is usually striking and the marked pleocytosis as a rule, decreases rapidly. Meningeal neurosyphilis in which the clinical symptoms are pronounced is sometimes difficult to distinguish from dementia paralytica, and when the latter complication is present the results of routine treatment are unfavorable.

4 Simpson W M Artificial Fever Therapy of Syphilis J A M A 105 2132-2140 (Dec 28) 1935

5 Moore J E The Modern Treatment of Syphilis Baltimore C C Thomas 1933

6 Stokes J H Modern Clinical Syphilology Diagnosis Treatment Philadelphia W B Saunders Company 1934

From the Section on Dermatology and Syphilology the Mayo Clinic. Read before the Section on Dermatology and Syphilology at the Eighty-Eighth Annual Session of the American Medical Association Atlantic City N J June 10 1937.

1 This committee a subcommittee of the Cooperative Clinical Group which is appraising the results of the various types of nonspecific therapy is composed of Drs W L Breutsch Indianapolis F G Ebaugh Denver P A O'Leary Rochester Minn W M Simpson Dayton Ohio H C Solomon Boston S L Warren Rochester N Y and Drs Thomas Parran Jr and R A Vonderlehr and Lida J Usilton MA of the United States Public Health Service.

2 O'Leary P A Cole H N Moore J E Stokes J H Wile U J Parran Thomas Vonderlehr R A and Usilton Lida J Cooperative Clinical Studies in the Treatment of Syphilis Asymptomatic Neurosyphilis Ven Dis Inform 18 45 (March) 1937.

3 Routine treatment consists of the use of one of the arsphenamines in conjunction with a heavy metal either bismuth or mercury. If mercurial injections are used one week of injections (six rubs) is considered equivalent to one injection of mercury. Routine treatment was given either intermittently or continuously with compounds of bismuth or mercury administered simultaneously with or in the intervals between the courses of arsphenamine. Intraspinal therapy is carried out by drawing 50 cc of blood from the patient half an hour after he receives an injection of one of the preparations of arsphenamine. The serum thus obtained is inactivated at 37 C and injected into the spinal canal after withdrawal of an equal amount of spinal fluid. Tryparsamide therapy consists of ten injections to a course given concurrently with injections of a bismuth compound. A rest period of two months is permitted between the courses. In malaria therapy from twelve to fourteen bouts of fever were originally allowed each patient while now eight or nine such febrile reactions are considered sufficient. Combined treatment comprises the foregoing methods of treatment used either successively or concurrently.

Eight patients who came under my care with evidence of meningeal neurosyphilis and to whom I gave malarial treatment because their spinal fluids retained a paretic formula in spite of specific treatment obtained completely negative serologic results three years after the fever treatment. Routine and intraspinal treatment was given to all these patients following malarial therapy. In three cases in which neurovascular accidents developed while the patients were receiving treatment with arsphenamine (neurorecurrence or

Classification of Neurosyphilis

- 1 Asymptomatic *Subjective*—no symptoms
Objective—positive spinal fluid
- 2 Meningeal A *Subjective*—fever chills weakness headaches nausea vomiting dizziness diplopia fatigue nervous exhaustion
Objective—positive spinal fluid deafness choked disks stiff neck meningismus nerve palsies aphasia reflex changes convulsions delirium coma
B Nerve palsies which appear with onset of 'secondaries' before antisyphilitic treatment is started are diagnosed as meningeal neurosyphilis
- 3 Vascular *Subjective*—headaches dizziness
Objective—Spinal fluid may be negative or positive. Mild personality changes mental dullness convulsions hemiplegia aphasia recurrent cerebrovascular accidents evidence of arteriosclerosis usually absent
- 4 Meningovascular The meningovascular group is made up of those cases of neurosyphilis lacking the characteristic manifestations which warrant a diagnosis of tabes dorsalis dementia paralytica vascular or meningeal neurosyphilis but manifesting evidence that is a combination of meningeal and vascular components whether occurring early or late in the course of the syphilis ('early' and 'late' referring to the duration of the syphilis). Spinal fluid usually positive
- 5 Optic atrophy Primary as with tabes dorsalis or secondary to neuroretinitis and so on
- 6 Neurorecurrences If nerve palsies appear after treatment is started exclusive of hemorrhagic encephalitis the diagnosis should be neurorecurrence or relapse. If it develops before treatment is started it is to be diagnosed as meningeal or meningovascular syphilis depending on the degree of involvement. If palsy develops within the first two years of infection as a result of lapse in treatment the diagnosis is neurorecurrence whereas if it develops while the patient is on treatment it is diagnosed as progress of the disease and is classified according to the type of involvement
- 7 Dementia paralytica *Subjective*—Nervousness depression fatigue decreased libido decreased potentia nymphomania vertigo irritability bradyphrenia changes in weight changes in memory disturbances of sleep
Objective—Personality changes conduct change mental deterioration emotional instability loss of memory disorientation poor judgment mental confusion dysarthria writing disorders grandiosity euphoria irritability excitability tremors (of face particularly), deep reflexes hypoactive or hyperactive pupillary changes convulsions cerebral accidents transient salivation care less dress slovenliness
- 8 Tabes dorsalis *Subjective*—Diplopia neuritic pains reduced libido and potentia gastro intestinal crises paresthesia of hands feet and trunk headaches dizziness
Objective—Argyll Robertson pupils fixed pupils anisocoria reduction of deep reflexes ataxia reduced sense of pain hyperesthesia changes in perception of heat and cold incoordination failing vision hemianopia optic atrophy vibratory sense changes Charcot joints gastro intestinal crises incontinence trophic ulcers cerebral nerve palsies
- 9 Other types Include all the rare manifestations in some of which the syphilitic origin is disputable such as Parkinson's disease multiple sclerosis myelitis spastic paraplegia chronic polyomyelitis brain tumors epilepsy

recidive) the results from combined fever and chemotherapy, which was given immediately after the appearance of the palsies were excellent. I also have observed patients with early syphilis complicated by neurosyphilis, the malarial treatment of whom produced a decided reversal in the reaction of the spinal fluid but did not prevent recurrence of cutaneous lesions and lesions of the mucous membranes. Accordingly, in cases of early syphilis complicated by the more severe types of neurosyphilis, if fever therapy is used it must be given in conjunction with, or followed immediately by, intensive chemotherapy.

MENINGOVASCULAR NEUROSYPHILIS

The results of treatment of disseminated meningovascular neurosyphilis by chemotherapeutic methods are also encouraging when the treatment is given shortly after the appearance of the clinical symptoms. Wile and Davenport⁷ reported striking clinical improvement in twenty of twenty-four cases in which malarial therapy was administered. Meningovascular neurosyphilis may be a transient phase of the disease, recognized while the patient is in the process of developing the more advanced clinical types of involvement of the central nervous system. Accordingly, if the clinical and serologic response to treatment is slow, consideration should be given to the possibility that clinical progression is occurring. Experience has revealed that chemotherapy after the fever treatment augments the results, both clinical and serologic, in meningovascular neurosyphilis.

VASCULAR NEUROSYPHILIS

In cases of the vascular type of neurosyphilis in which other causes of neurovascular accidents have been excluded, the results of treatment from specific medication are none too encouraging. The hazard of fever therapy is great if patients present this complication. It should be borne in mind that, in most of the cases in which the paralysis is of transient nature, dementia paralytica is the cause of the cerebrovascular accident rather than pure vascular neurosyphilis. The prolonged use of chemotherapeutic agents in small doses, and potassium iodide, is recommended for patients with vascular neurosyphilis.

DEMENTIA PARALYTICA

Arsphenamine, bismuth and mercury when used alone have but little value in the treatment of dementia paralytica, hence the discussion of the treatment of this type of neurosyphilis will be limited to shock therapy, of which chemotherapy is an essential part. Malarial therapy produced clinical remissions to the extent that 35 per cent⁸ of my patients whose disease had progressed far enough to warrant institutional care at the time treatment was given were still able to work ten years after treatment. Dattner⁹ noted that the so-called economic remission had been maintained in 38 per cent of his cases ten years after fever therapy. Of the patients who present incipient evidence of dementia paralytica, from 50 to 85 per cent will have economic remissions, this result depends on the degree of cerebrovascular involvement, the type of dementia paralytica, the grade of the spinal fluid reaction, the duration of the syphilis, and the amount of previous antisyphilitic treatment. Experience with fever therapy indicates that the best results from it are noted in the cases in which there are no clinical signs of dementia paralytica but in which the paretic formula in the spinal fluid is maintained in spite of intensive treatment with the specific remedies. Accordingly, I⁸ still believe that malarial therapy is of more value in the prevention of dementia paralytica than it is in the treatment of it.

The results from treatment with the various mechanical units for producing fever are similar to those from

7 Wile U. J. and Davenport K. M. The Malarial Therapy of Neurosyphilis, Other Than Uncomplicated Dementia Paralytica. *J. A. M. A.* 97: 1579-1585 (Nov. 28) 1931.
8 O'Leary P. A. and Welsh A. L. The Treatment of Neurosyphilis with Malaria: Observations on 984 Cases in the Last Nine Years. *J. A. M. A.* 101: 498-501 (Aug. 12) 1933.
9 Dattner Bernhard. Moderne Therapie der Neurosyphilis mit Einschluß der Punktionstechnik und Liquor Untersuchungen. Vienna Wilhelm Maudrich 1933.

malarial therapy Neymann¹⁰ recently reported that in 22 per cent of approximately 700 cases of dementia paralytica, collected from various reports in the literature, economic remissions developed. Bainacle, Ebaugh and Ewalt¹¹ treated and compared two series of patients with dementia paralytica, one group received hyperthermy and tryparsamide and the others were given malarial therapy only. The incidence of remission was 6 per cent higher in the group treated with the combination of hyperthermy and tryparsamide. No doubt the addition of tryparsamide in the group treated with malaria would have equalized the results. Irrespective of the type of fever therapy used, chemotherapy should be started shortly after the febrile course. The combination of tryparsamide and bismuth has offered the highest incidence of remissions among patients with dementia paralytica when used following fever therapy.

TABES DORSALIS

It is difficult to appraise the results of the treatment of tabes dorsalis not only because it is such a multiform disease but also because it may spontaneously arrest itself or show a persistence of symptoms, even though clinical progression has been stopped, and because the results of serologic studies are inconsistent and do not always parallel the clinical observations.

I shall discuss, first the serologic results of treatment. The outstanding serologic reversals among patients with tabes dorsalis are noted in those cases in which the signs indicate that the tabes is mild and incipient and in which the syphilis has been present ten years or less. Likewise, the patients who have the milder types of spinal fluid positivity obtain serologic reversal with smaller amounts of treatment and with less intensive therapeutic methods. In a study of cases of tabes dorsalis it was found that serologic reversal was obtained from chemotherapy in 64 per cent of 630 cases. In cases in which the spinal fluid changes were those of the mild type of the disease, the reversals of the serologic reaction to negative were almost twice as common (81 per cent) as in those in which the fluids were those of the more malignant type of the disease (46 per cent). An appraisal of the value of any therapeutic measure used for the treatment of patients with tabes dorsalis is difficult because the method of treatment is usually intensified when the serologic characteristics or the clinical symptoms are resistant. Accordingly, the attempt to evaluate the more intensive systems of treatment is, in reality, an index of the status of the patient's resistance to the infection rather than an actual evaluation of the system of treatment. This was well demonstrated when the results of adequate and inadequate amounts of specific treatment were appraised, as it was found that the incidence of serologic reversals was about the same from the two types of treatment. However, in at least two thirds of the cases the early reversal of the spinal fluid indicates that a favorable clinical response will be noted. From all methods of chemotherapy I found that excellent clinical results were obtained in 26 per cent of the cases of tabes dorsalis, moderate improvement developed in 41 per cent and in 22 per cent there was no change. In 11 per cent the disease progressed clinically in spite of treatment. An

appraisal of the clinical results obtained from the various systems of treatment indicates that the addition of intraspinal therapy to routine chemotherapy will double the number of patients who show marked improvement. In fact, among patients with the early clinical signs of tabes dorsalis the use of the combination of intraspinal and routine therapy produced the greatest proportion of maximal improvement. The results from the use of tryparsamide and bismuth compounds were slightly less than those from intraspinal therapy. The patient with advanced signs of tabes dorsalis responds but slightly, or not at all, to the various methods of treatment.

Malarial therapy produced clinical arrest in 26 per cent of my cases of tabes dorsalis in which routine treatment had failed and was of material help in an additional 40 per cent. Malarial therapy was of benefit to 31 per cent of patients with gastric crisis, and improvement occurred in 11 per cent of those with persistent lightning pains. In 14 per cent of the cases of optic atrophy, apparent arrest of the loss of vision developed following malarial therapy. Bennett,¹² reporting on the results of hyperthermy, noted that eleven patients with these resistant complications of tabes were greatly improved. It would seem advisable to postpone further judgment on the results of hyperthermy in cases of this type until a period of observation of several years has elapsed, because I noted comparable results in a similar group of cases the first year after malarial therapy, following which the symptoms reappeared.

Among patients with tabes dorsalis and completely negative serologic characteristics of the blood and spinal fluid, the results from treatment of all types have been disheartening. Lightning pains, gastric crisis, optic atrophy, ataxia and Charcot joints are not materially benefited by fever or chemotherapy if the examination of the spinal fluid gives negative results. The surgical treatment of gastric crisis, lightning pains and Charcot joints has not been entirely successful, and the variations in the results from surgical measures would indicate that the skill of the surgeon must be outstanding if success is to be met.

Tryparsamide has well withstood the test of time. Since Lorenz and his co-workers¹³ recommended its use in the treatment of dementia paralytica in 1923, the therapeutic value of the drug has steadily increased. Reese¹⁴ observed that results from the use of tryparsamide in dementia paralytica compare favorably with those from fever therapy. The drug is valuable also in the treatment of such manifestations of neurosyphilis as tabes dorsalis, meningeal neurosyphilis, meningovascular neurosyphilis and some of the rare types of neurosyphilis. In fact, tryparsamide can be used to advantage in treatment of any of the late manifestations of neurosyphilis, provided the patient does not present evidence of disease of the optic tract. It has special merit in the treatment of late neurosyphilis following fever therapy. Tryparsamide should not be used in the treatment of early cardiovascular syphilis or latent syphilis with persistently positive serologic characteristics of the blood.

12 Bennett A E. Fever Therapy in Tabes Dorsalis. Relief of Gastric Crises and Lightning Pains by Use of Kettering Hyperthermy. *J A M A* 107 845 849 (Sept 12) 1936

13 Lorenz W F, Lovenhart A S, Bleckwenn W J and Hodges F J. The Therapeutic Use of Tryparsamide in Neurosyphilis. *J A M A* 80 1497 1502 (May 26) 1923

14 Reese H H. Tryparsamide in the Treatment of Neurosyphilis. *J Nerv & Ment Dis* 78 354 361 (Oct) 1933

10 Neymann C A. Treatment of Syphilis by Artificial Fever unpublished data

11 Bainacle C H, Ebaugh F E and Ewalt J R. Treatment of Dementia Paralytica. Comparative Study of Combined Artificial Hyperpyrexia and Tryparsamide versus Therapeutic Malaria. Preliminary Report. *J A M A* 107 1031 1036 (Sept 26) 1936

Potassium iodide is still given liberally and over long periods in the treatment of neurosyphilis, even though its use is empirical.

Many agents have been recommended for the treatment of neurosyphilis other than those I have mentioned. A few of these which still have enthusiastic advocates are silver arsphenamine, sulfur,⁹ typhoid vaccine,¹⁶ bacterins,¹⁶ and hot baths.¹⁷ The results of treatment with these agents have been less satisfactory than those I have discussed, although an occasional patient may be encountered in which one of these agents is of definite value. In the selection of the type of chemotherapy that is to follow fever therapy, attention should be paid not only to the type of neurosyphilis but also to the other complications of syphilis which the patient may manifest. For example, in the presence of dementia, tryparsamide is recommended, when simple aortitis without regurgitation is recognizable, arsphenamine, and bismuth or mercury compounds, may be of special merit, while in the resistant types of asymptomatic neurosyphilis I have found that the use of intraspinal therapy results in the highest incidence of reversal of the serologic characteristics of the spinal fluid.

SUMMARY

The development of knowledge of neurosyphilis and its treatment dates back a quarter of a century. During this time it has been shown that one of the outstanding values of chemotherapy, with arsphenamine and compounds of bismuth or mercury, is its ability to prevent the development of neurosyphilis. Of a large group of cases of early syphilis, adequate administration of these remedies prevented the appearance of neurosyphilis in 94 per cent. When the neurosyphilis was manifested, the value of chemotherapy was greatest in the asymptomatic type, in which it produced excellent results in 75 per cent of the early cases, while it was practically valueless in the treatment of patients who gave evidence of well established dementia paralytica. Between these two extremes are a great number of patients with various types of neurosyphilis, in which the results of chemotherapy differ according to the duration of the syphilis and the degree and extent of involvement of the central nervous system. In those cases in which only invasion of the nervous system has occurred the results of treatment are usually satisfactory, while in those in which extensive parenchymatous and vascular involvement has occurred the results are proportionately unfavorable. Accordingly, the demand for a method to control the disease in the later types was met when Wagner von Jauregg¹⁸ recommended malarial therapy, which also has weathered the trial of time and experience in thousands of cases. The effort to simplify malarial therapy resulted in the development of artificial fever therapy, first by the radiotherm, then by the hypertherm, and subsequently by a variety of means of raising the patient's temperature. It was at first hoped that the production of fever by mechanical methods

would result in a new method of therapy, namely, the killing of bacteria within the patient. Experience to date has shown, however, that this concept is applicable only in those diseases in which the thermal death point of the bacteria is low. *Spirochaeta pallida* has a high thermal death point (114 F), so it would appear that the favorable results obtained in neurosyphilis by fever therapy, whatever the type may be, are the result of some biologic phenomenon the nature of which at present is not known. Fever therapy in the treatment of neurosyphilis, although used empirically, should be administered in conjunction with, or immediately followed by, chemotherapy.

In addition to arsphenamine, compounds of bismuth or mercury, and fever therapy, there are several other therapeutic agents which have been shown by years of experience to be of value in the treatment of neurosyphilis. Outstanding among these is tryparsamide, which, when used in conjunction with fever therapy, offers the highest incidence of clinical and serologic remissions in dementia paralytica. The combination of tryparsamide and a compound of bismuth is recommended in the treatment of patients with neurosyphilis who are too debilitated to undergo fever therapy, as well as in the types of neurosyphilis in which benefit does not result from fever therapy.

The value of intraspinal therapy is well demonstrated in cases in which there are early clinical signs of tabes or optic atrophy, and in cases of asymptomatic neurosyphilis. Intraspinal therapy should not be given when evidence indicates extensive involvement of the lower part of the spinal cord.

The less intensive types of nonspecific therapy, such as those in which are employed typhoid vaccine, hot baths, sulfur in oil, and bacterins, are applicable in those cases in which a mild nonspecific effect is desired, because in the malignant types of neurosyphilis these remedies are less efficient than the more strenuous types of fever therapy.

In addition to the use of the specific and nonspecific agents in cases of neurosyphilis, attention also must be directed toward the care of the complications of neurosyphilis, such as infected cord bladder, moreover, the development of drug addiction should be avoided.

As the treatment of neurosyphilis cannot be standardized, the treatment of the patient who has syphilis of the nervous system must be individualized. Many of these patients, especially those with the early manifestations of neurosyphilis, are strikingly improved by routine therapy, and it is advisable to give them, first, the benefit of a trial with arsphenamine and a bismuth or mercury compound. If there is not a favorable response after two such courses of treatment, the need for nonspecific therapy then should be considered. However, if the patient is displaying early manifestations of dementia paralytica, fever therapy should be employed immediately. The factors that influence the decision as to the type of nonspecific treatment to adopt are the type and degree of neurologic involvement, the age of the patient, the duration of the syphilis, and the status of the patient's general condition. Fever therapy, irrespective of the type used, must be given in conjunction with, or it must be followed by, chemotherapy. The earlier the neurosyphilis is recognized and the treatment started, the more favorable will be the effects of any type of therapy.

15 O'Leary, P. A. and Brunsting, L. A. Nonspecific Treatment of Neurosyphilis. Fifth Annual Report. J. A. M. A. 94: 452-454 (Feb. 15) 1930.

16 Kemp, J. E. and Stokes, J. H. Fever Induced by Bacterial Products in the Treatment of Syphilis. Observations in Sixty-Five Cases. J. A. M. A. 92: 1737-1741 (May 25) 1929.

17 Dennis, C. C. Methods of Increasing the Specific Resistance of a Syphilitic Individual to His Disease. South. M. J. 25: 462-467 (May) 1932.

18 Wagner von Jauregg, Julius. Ueber die Einwirkung der Malaria auf die progressive Paralyse. Psychiat. neurol. Wchnschr. 20: 132-134 (Aug. 31) 1918.

INDUSTRIAL PREVENTIVE MEDICINE

A PLAN FOR THE CONTROL OF OCCUPATIONAL DISEASES

C D SELBY, M D

DETROIT

Physicians in industry devote much attention to the prevention of disease. They know that diseases of occupational origin are amenable to control and they understand the technique, but their services are available to a limited section of the working population, mostly in large establishments. Physicians in general practice, who are not so familiar with the subject, serve the large remainder. They can now well afford to give the subject consideration.

The time is coming, if it is not already here, when the managements of small plants will seek medical advice on the effect of shop conditions on health and will request guidance in giving their employees medical protection. Naturally, they will go to the doctor whom their workmen consult, and this is the physician in general practice. This elemental presentation in outline form is prepared chiefly for him.

For discussion, the program of industrial preventive medicine may be divided into three sections: the prevention of occupational diseases, the maintenance of health, sometimes known as physical supervision, and the rehabilitation of workmen disabled by injury, sickness or age.

A PREVENTION OF OCCUPATIONAL DISEASES

To prevent occupational diseases one must seek out their sources and control them. These will be found in working conditions and environment in processes, operations or methods and in substances or materials intrinsic to manufacturing. They are usually in the form of dusts, mists, vapors, fumes, gases or fluids. For the purpose of brevity, all industrial sources of disease are termed "exposures," and the word will be used in that sense throughout this article.

1 *Identification of Exposures*—The first step then, toward control is to identify the materials or conditions that are capable of causing disease. This can be done by (a) tracing back sicknesses that occur, which is the usual method, though it is unscientific and expensive. It is far better for the doctor to anticipate possible diseases by (b) a study of the materials used in manufacturing. If any of them are recognized as possible sources of disease, the operations or processes of which they are part are immediately recognized as exposures. Most sources of disease can be located in this way, but it is also important that the physician bear in mind that a harmless substance may become a source of disease under certain conditions. It is therefore necessary that the doctor (c) study the methods of manufacturing and that he look for additional causes in the (d) general plant conditions.

2 *Determination of Importance of Exposures*—Exposures having been identified, it is the doctor's duty to determine their importance. This he may do by (a) casual observations. Harmful dusts, fumes, mists, vapors and gases which are noticeable are obviously not under control. If the doctor has any doubt, or if for any other reason he desires scientific confirmation, he may arrange for (b) engineering studies consisting of dust counts and other analytic methods of deter-

mining the condition of air at the breathing level of the workmen. These will indicate the extent of exposures, and the results may become useful as factual evidence. Such studies can be made by an industrial hygienist, by a plant chemist in cooperation with the physician or by some one especially trained for that purpose, not necessarily a chemist or an engineer. If dust and other contaminants are important problems, a more or less continuous engineering service is desirable because conditions vary from time to time and one reading does not necessarily reflect the average.

3 *Control of Exposures*—This is largely a ventilation problem. It is not the duty of the physician, but after he has identified sources of disease and reached conclusions as to their importance, it becomes his duty to direct the management's attention to the need of control measures. How he does this depends on his place in the organization.

For information, however, it may be said that exposures are ordinarily controlled by (a) substitution of harmless materials if possible, (b) changes in processing and manufacturing, (c) capture of dusts, fumes, mists, vapors and gases at their points of origin, (d) segregation of operations in which capture is not feasible, (e) use of respiratory protective devices when safe limits of air contamination are necessarily exceeded or, (f) if the exposure is dermal, the use of protective creams or suitable gloves and clothing.

4 *Maintenance of Control*—Exhaust systems for the removal of dust and other air contaminants, and all respiratory protective devices, being mechanical in nature, are prone to get out of order. Plant conditions and methods may be changed. It is therefore essential that a plan for the prevention of diseases in industry include procedures that assure continued control over exposures. The first essential is intelligent use of the protective equipment. Workmen must receive (a) suitable instruction and have (b) watchful supervision.

In order that the plant physician can make his full contribution to the promotion of a control program, it is advisable that he make (c) periodic plant inspections, the periodicity of which is determined by the conditions which he finds. It may be necessary for him to visit some departments weekly, others monthly.

Because of frequent changes in manufacturing methods and processes, it is also important that the doctor make (d) studies of all materials that are purchased and also (e) studies of all new processes or modifications of old ones before installations are made or changes are effected.

Application of this program serves to simplify the problem of preventing occupational diseases and enables the plant physician, or the physician who practices casually in industry, to make an understandable analysis for submission to the management.

Many conditions capable of causing disease will be found to be under control. As a matter of fact, industry has progressed surprisingly in this direction, far more than members of the medical profession realize. Some exposures will be on the border line, and a few will need urgent attention. The practical approach is to secure early control of those most needing attention, after which exposures on the border line of importance may be corrected.

B MAINTENANCE OF HEALTH

When the physician has secured control over the conditions in the plant which are capable of causing disease, his health maintenance program is considerably simplified but it is nevertheless important that he give the

workmen themselves enough of his attention to assure them early diagnosis of diseases that may occur despite measures to control exposures. This attention consists of physical examinations designed to assist workmen to find suitable employment, to remain suitably employed and to safeguard their health during employment.

1 *Preemployment Examinations*—The preemployment inspection which has become an established custom is not adequate to the purpose of a complete health maintenance program. The examination should be sufficiently complete for accurate diagnosis. It is important, for example, that a man with active tuberculosis not be employed in a dusty occupation. Such employment would be unfair to the applicant himself and to his fellow workmen. Such a man needs treatment, not employment.

It is not possible to recognize tuberculosis in all the stages by physical examination alone, therefore, modern industrial preventive medicine furnishes an applicant for employment in a dusty occupation with an x-ray examination of the chest. This thought being carried a little further, the examination should be so complete as to permit the physician to advise the employment department as to placement of applicants who are physically handicapped. Heart disease, by way of illustration, may on first impulse call for rejection, but physicians know that many men with cardiac lesions may be employed under suitable conditions and given opportunities for useful lives. To see that the physically handicapped are suitably employed is an important function of medical service in industry.

Many examples of this nature could be mentioned, but it is not my purpose to set up standards for rejection or placement. The doctor must use his judgment. He must decide each questionable case on its merits, and his decision must be influenced by facts only. Naturally, his examination should be of such completeness as to justify his decision. To this end, special diagnostic equipment may be needed—x-ray apparatus for the study of the lungs, laboratory facilities for studies of the blood, an electrocardiograph and other apparatus.

The object of the preemployment examination is to permit acceptance of applicants with a minimum of risk to themselves, their fellow employees and their employers and placement under conditions that will have the least possible harmful effects on their health and earning power.

2 *Periodic Examinations*—The purpose of the periodic examination is to assist workmen to continuous employment with a minimum of physical deterioration or sickness attributable to occupation. As some workmen are susceptible to certain exposures, it is desirable that all new employees who may in any way be affected by their occupation be observed frequently during their early days of employment. All workmen should be examined as often as necessary to assure them against ill effects.

The frequency of the periodic examination depends on the physical condition of the workmen at time of employment or at time of last examination and on the nature of their occupations. If they are employed where lead is used under conditions which indicate the possibility of absorption, they should be examined monthly. If they are exposed to dust of a silicious nature or otherwise, they should be examined once a year. All workmen absent more than seven days because of injury or sickness should be examined on returning to work. All employees should be examined at least once a year.

If the doctor finds conditions that indicate the need of changing a man's occupation or of recommending a period of absence for recovery, he should be certain of his ground before he renders a decision, but, when he has once reached a conclusion, the decision should be final, always assuming, however, that it has been based on an impartial study of the medical facts as he sees them.

3 *Consultations*—The established plant physician, having won the confidence of the employees, will be consulted frequently for the relief of minor ailments and for advice on the treatment of conditions that may or may not have relation to occupation. This is a delicate phase of industrial practice. The doctor must so conduct himself as to retain the confidence of the workmen and maintain the good will of the workmen's own private physicians. The doctor in industrial practice must not compete with physicians in general practice. It is possible, however, for him to shorten the period that ordinarily exists between the early stages of sickness and treatment by the family physician.

One of the most important duties of the plant physician is to guide the workmen desiring or needing general medical service outside the plant. He may give temporary treatments which will enable workmen to finish a shift, he may treat injury and sickness that result from occupation, but all else must be directed into the channels of ordinary medical practice.

This phase of industrial medicine is highly regarded by the management as a builder of good will. It is valued accordingly. It rounds out the plant physician's health maintenance program, it behooves him to encourage it.

4 *Adequate Treatment*—The physician is a professional man. He is entitled to use his judgment in the treatment of injuries and diseases, but he does not need to invade the field of private practice on the theory that it is necessary for him to do so in order to protect the interest of the management or guarantee workmen adequate treatment.

5 *Records*—The maintenance of suitable and adequate records is one of the most difficult problems confronted by the physician in industry. Ordinarily his records show volume of work. The management is not particularly interested in records of this nature. But the management does want records which will indicate sources of injury and disease which are not under control. The management also wishes a complete medical record of each employee in order that claims for compensation may be judged fairly, and the physician certainly needs a record of this nature in order that he may advise workmen in the maintenance of their health.

Industry has little conception as to the cost or importance among workers of ordinary sickness not attributable to occupation or of the possible relation, if there is any, of occupation to ordinary sickness. Here is an opportunity for the plant physician to make a special study. It is therefore suggested that medical records be such that studies can be made of ordinary sickness as well as of occupational diseases and injuries. This is important because the range of compensatable diseases is gradually being extended.

C REHABILITATION

1 *Physical Therapy*—This is mentioned chiefly for the purpose of indicating its place in a health maintenance program. If workmen are disabled because of sickness or injury, it may be possible for the physician

to ameliorate their disabilities by special surgical treatments or physical therapy

2 Occupational Therapy—When the physician has gained the best possible physical condition for disabled workmen, the final results may require changes of occupation and possibly special training. These are not medical functions, but they should be of interest to the physician

3 Replacement—Reconstructive surgery, physical therapy and retraining of disabled workmen are all more or less useless unless such workmen can be given work suitable to their changed physical conditions. This is an employment procedure, but it requires the highest degree of cooperation between medical and employment departments and skilful handling

The purpose of rehabilitation is to conserve human values. The same motive is applicable to industrial preventive medicine, and by that token the physician who serves the working people impartially serves industry best. He must serve them as he would if they were his private patients. Good will is an unsought but welcome result of such a policy, and it might readily become the most important output of a plant medical department

General Motors Corporation

ABSTRACT OF DISCUSSION

DR G H GEHRMANN, Wilmington, Del. Our knowledge of occupational diseases is extremely meager. There are undoubtedly many occupational diseases which have not been detected up to the present time. Our knowledge of the action of compounds on the central nervous system and the circulation is almost negligible. Any plan for the control and prevention of occupational diseases must be based on an understanding of the toxicology of the compounds involved. It is essential to know what organs are attacked and the mode of entry into the circulation. From this the symptomatology is deduced, which enables one to set up an examination schedule adequate for the detection of absorption of that particular material. Pre-employment examinations should be for the purpose of selecting individuals who can safely work in chemical industries without being subjected to the danger of aggravating an existing condition. Periodic examinations are of little use as such, unless they are based on the toxicology of the compounds involved and a knowledge of how rapidly the compound is absorbed into the circulation. Periodic examinations must be of a special type and general physical examinations in most instances fail to reveal the desired information. When it becomes necessary to treat occupational diseases we have a true indication of failure in protective methods both from the mechanical and from the medical points of view.

DR ALVIN W SCHOENLEBER, New York. Dr Selby called attention to the evolution of industrial medicine. Only a few years ago the industrial physician was one who bandaged fingers. We have now reached the stage at which the industrial physician is recognized as one who occupies an important position in the control of occupational diseases. We are now well into the next stage of evolution, in which the industrial physician is recognized as a most important factor in preventive medicine. Public health officers are doing marvelous work in the control of disease by instituting measures that apply to the community rather than to the individual, their activities being limited largely to communicable diseases. There is, however, another great field for preventive medicine which cannot be touched by public health officials because it requires personal contact with each individual. I refer to periodic health examinations, which, if properly conducted, and suitable action taken in accordance with the conditions that are found, will reduce disability particularly from degenerative diseases, raise the general level of health and increase the employees working efficiency. The industrial physician, because of his special training and opportunities for contact with large groups of persons, is in an ideal position to practice this most important phase of

preventive medicine. Those of us who come in contact with the average workman know that the greatest obstacle to constructive preventive medicine of this type is the failure of employees to have defects corrected because they feel they cannot afford medical and surgical service except for conditions causing acute discomfort. For several years we have been threatened with social medicine. Industrial physicians are in accord with others in opposing government control of medical service, but we more than the general practitioner realize that there is a real need for a more satisfactory means of financing the cost of medical service. This, then, suggests the next step in the evolution of industrial medicine. The so called social or state medicine is in reality industrial medicine, because it applies only to employees and employers who can be taxed. The problem of providing more adequate medical service at a reasonable cost is therefore one which should be solved by industry with the guidance of the industrial physician. Industry has been slow to realize the danger of state medicine or to take practical steps to minimize this danger. It is not yet too late to adopt practical businesslike plans for providing employees with medical service at reasonable cost which, if successfully operated will counteract propaganda for state medicine.

DR HAROLD B WOOD, Harrisburg, Pa. There are a number of small plant physicians who never read *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. I would suggest that the state health departments in their monthly publications print abstracts of this paper of Dr Selby's and also give a list of the deleterious substances which were presented to us by Dr McConnell, including the trade names, so that these physicians may know what the deleterious substances are. Another point I should like to mention is that a large industry using dyestuffs was having considerable trouble, getting many cases of dermatitis. On investigation it was found that the dyestuffs were those having the methyl radical. The industry switched over to dyestuffs using the ethyl radical and they have had no further trouble. That is a point for the consideration of those persons having the opportunity of investigating dyestuffs.

DR C D SELBY, Detroit. The discussion has emphasized a point which I have in mind, namely, that preventive medicine in industry is but one aspect of preventive medicine, but do not forget that we as industrial physicians have the workmen about forty hours a week now out of a total of 168 hours. They are in your hands the remainder of the week, so the problem of the maintenance of health of the working men is a public health problem. We of industry are prepared to assist public health officers and will carry on under their guidance. Industry wishes to give labor the best possible medical protection consistent with public interest, the interest of management, of labor and of the medical profession.

Connective Tissue and the Defense Reactions—The intensive study of various defense reactions has resulted in amassing more and more evidence substantiating the idea that the defense of the vertebrate body against invading parasites, or even against inanimate foreign material introduced parenterally, predominantly involves the connective tissue. The cells of this tissue arrive embryonically from the mesenchyme and in their widespread distribution throughout the adult animal comprise the blood and lymph, the reticular tissues of the myeloid and lymphatic organs, the loose connective tissue associated with the skin and various organs, the dense connective tissue as is found classically in the derma of the skin, the regular connective tissues of the tendons, ligaments, etc., the specialized connective tissues found in the mucous membranes of the gastro-intestinal tract and uterus and the interstitial connective tissue of the lung testis and ovaries. There various tissues perform widely diversified functions in the normal animal, varying from respiration, intermediate metabolism and storage, to mechanical support. The defense reactions, however, are largely limited to the cells and fluids of the blood and lymph and of the reticular and loose and dense connective specialized or accentuated aspects of such normal functions as intermediate metabolism and storage—Taliaferro, W H, and Mulligan, H W. *The Histopathology of Malaria, with Special Reference to the Function and Origin of the Macrophages in Defense*, part 1. Memoir 29, Indian Medical Research Memoirs, May 1937.

PURPURA HAEMORRHAGICA

WITH SPECIAL REFERENCE TO COURSE
AND TREATMENTMAXWELL M. WINTROBE, M.D.
EDWARD M. HANRAHAN, JR., M.D.
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Ten years after Kaznelson's¹ announcement of the dramatic results following splenectomy in a case of "essential thrombopenia," Whipple² was able to collect data concerning the effects of splenectomy in eighty-one cases. Spence³ collected twenty-three additional records, and in 1932 Eliason and Ferguson⁴ summarized a total of 213 cases. This number, however, did not represent the experience of any individual or group but was a compilation of reports by many writers, most of whom described only one or two cases, published within a year after splenectomy.

The course of purpura haemorrhagica is so varied, and spontaneous remissions, relapses and recurrence many years after the initial episodes of bleeding are so common, that it must be evident to those familiar with this disorder that adequate appraisal of the effects of operation makes necessary the study of patients many years after splenectomy. Furthermore the value of splenectomy can be determined only by comparison with the course of purpura haemorrhagica as treated by medical measures. Little information of this kind is available.

MATERIAL

Our report is based on the observation of sixty-two patients who had been seen in the Johns Hopkins and the Union Memorial hospitals in Baltimore. Nineteen⁵ of these patients were subjected to operation. The great majority were seen at some stage by us. They were selected only in the sense that doubtful cases were excluded. Typically, they presented the phenomena of abnormal bleeding or bruising or both, petechiae, diminished numbers of platelets, prolonged bleeding time, nonretractility of the blood clot, normal clotting time, positive reaction to the tourniquet test and, in the more recent cases a positive reaction to the moccasin venom test.⁶ Instances of purpura or hemorrhage asso-

ciated with leukemia, aplastic anemia, poisoning or infections such as bacterial endocarditis were not included in the series, or cases of the type of purpura associated with erythema, swelling or inflammation.

Thirty-six patients were reexamined by us, and information through reports of various physicians and of the patients themselves was obtained regarding all but six cases in this series. Data were thus collected regarding the course of thirteen patients from ten to twenty-nine years after their initial symptoms of purpura, nineteen patients from five to nine years after ward, eight patients from three to four and nine-tenths years afterward and seven patients from one to two and nine-tenths years afterward. For only fifteen of the group was the information available for a period of less than one year. Of these fifteen, five were unreported after the first episode of bleeding and five died within the first year.

Reexamination included not only a full history and physical examination but complete studies of the blood, including a red cell count, determinations of the hemoglobin and hematocrit content, bleeding time, clot retraction time and coagulation time, a platelet count, a leukocyte count and examination of the blood smear, as well as a tourniquet test and in some cases the intracutaneous test with snake venom.

SEX, RACE, AGE AND FAMILY HISTORY

There were twenty-seven male patients and thirty-five female. This sex incidence in our cases is somewhat unusual, it being generally believed that purpura haemorrhagica occurs much more frequently in females than in males, perhaps in a ratio of 2:1. Study of other reports leads us to believe that 4:3 is more accurate.

Only four of our patients were Negroes, although the ratio of Negroes to white persons admitted to the Johns Hopkins Hospital is 3:7.

It is of interest that in forty of our cases (64.5 per cent) symptoms of purpura appeared before the age of 12 and that, in fifteen more, symptoms developed between the ages of 12 and 24, making a total of 88.7 per cent (fig. 1). In six cases symptoms developed in patients from 46 to 54 years of age.

The incidence of purpura haemorrhagica in early life is well recognized. In figure 2, data compiled from the records published by Eliason and Ferguson⁴ and by Brown and Elliott,⁵ as well as from our own cases have been used to show the age incidence in 271 cases. In 62.8 per cent of these cases purpura haemorrhagica appeared before the age of 21.

It may also be pointed out that thirteen of our patients (six males and seven females) gave a definite history of ready bruising and frequent epistaxis or other forms of bleeding in other members of the family, and in two instances death had occurred from this cause. One family history which is particularly impressive is shown in figure 3. The familial or hereditary form of purpura which is best known is characterized by a normal platelet count in spite of prolonged bleeding time.⁸ Hess,⁹ however, noted the familial occurrence

Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

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¹ Kaznelson, P. *Verschwinden der hamorrhagischen Diathese bei einem Falle von Essentielle Thrombopenie* (Frank) nach Milzexstirpation. *Wien. klin. Wchnschr.* 29: 1451, 1916.

² Whipple, A. O. Splenectomy as a Therapeutic Measure in Thrombocytopenic Purpura. *Haemorrhagica Surg. Gynec. & Obst.* 42: 329 (March), 1926.

³ Spence, A. W. The Results of Splenectomy for Purpura Haemorrhagica. *Brit. J. Surg.* 15: 466 (Jan.), 1928.

⁴ Eliason, E. L. and Ferguson, L. K. Splenectomy in Purpura Haemorrhagica. *Ann. Surg.* 96: 801 (Nov.), 1932.

⁵ Giffin, H. Z. Essential Thrombocytopenic Purpura. *Internat. Clin.* 46: 95-119 (Dec.), 1936. McLean, Stafford, Kreidel, Katherine and Caffey, John. Hemorrhagic Thrombocytopenia in Childhood. A Clinical Study of Twenty-One Cases. *J. A. M. A.* 98: 387-393 (Jan. 30), 1932.

⁶ Jones, H. W. and Tocantins, Leandro. The Treatment of Purpura Haemorrhagica. *ibid.* 100: 83-88 (Jan. 14), 1933. Brown, D. N. and Elliott, R. H. E. The Results of Splenectomy in Thrombocytopenic Purpura. A Comparative Study of Ten Cases in Which Splenectomy Was Performed and Eleven Cases Treated by Conservative Methods. *ibid.* 107: 1781-1788 (Nov. 28), 1936.

⁷ Splenectomy has recently been successfully carried out in one more case (case 47). See footnote 14.

⁸ Peck, S. M., Rosenthal, Nathan and Erf, L. A. The Value of the Prognostic Venom Reaction in Thrombocytopenic Purpura. *J. A. M. A.* 106: 1783 (May 23), 1936.

⁸ von Willebrand, E. A. and Jurgens, R. New Hereditary Blood Disease: Constitutional Thrombopathy. *Deutsches Arch. f. klin. Med.* 175: 453-483 (Aug. 4), 1933. Farber, J. E. A. Familial Hemorrhagic Condition Simulating Hemophilia and Purpura Haemorrhagica. *Am. J. M. Sc.* 188: 815-822 (Dec.), 1934. Handley, R. S. and Nussbrecher, A. M. Hereditary Pseudo-Hemophilia. *Quart. J. Med.* 4: 165-178 (April), 1935. Bailey, F. R. and McAlpin, K. R. Familial Purpura. *Am. J. M. Sc.* 190: 263-269 (Aug.), 1935.

⁹ Hess, A. F. The Blood and the Blood Vessels in Hemophilia and Other Hemorrhagic Diseases. *Arch. Int. Med.* 17: 203 (Feb.), 1916.

of thrombocytopenic purpura, and Witts¹⁰ also has observed such cases

The onset of purpura haemorrhagica in early life, the predominance of this disorder in the white race and the frequency of a relevant family history are features which suggest the possibility of a constitutional predisposition to the disease

THE COURSE OF THROMBOCYTOPENIC PURPURA

The course of the disease in each of the patients is indicated in figures 4, 5 and 6. The division of medically treated patients into those in whom only one episode of bleeding occurred (fig 4) and those in whom second attacks of hemorrhage developed (fig 5) is purely artificial, for some of the patients could not be followed and their subsequent history is unknown, while other patients, observed more recently may yet show further symptoms. Nevertheless the division is useful for purposes of description. Patients on whom splenectomy was performed are shown in figure 6.

The cases grouped in figure 4 differed considerably in severity. In about a third, hemorrhage was confined to the skin; in another third there was bleeding from the nasal and oral mucous membranes in addition, while in another third bleeding occurred also from the gastrointestinal or the genito-urinary tract. In more than half of the cases (fourteen) the platelet counts were lower than 50,000 per cubic millimeter. Eleven patients received transfusions, one receiving as many as six.

Two of these twenty-five patients died during the first episode of purpura. Hyperthyroidism was a complication in one (case 53), a woman of 51. In spite of repeated transfusions, the patient died of subdural hemorrhage and bleeding into the right auricle, after an illness of fourteen days. The second case (54) was complicated by pregnancy (five months).

The episodes of purpura in the twenty-three cases in which recovery occurred lasted from seven to forty-five days, averaging nineteen and seven-tenths days, except for two episodes of 119 and 120 days, respectively.

In four cases (6, 7, 8, 9) cessation of bleeding was associated with a well marked increase in the number of platelets, in two others (11, 12) a rise in the platelet count followed a few days after the cessation of bleeding, the count in one instance reaching 600,000 per cubic millimeter. In many cases, however, the increase in the platelet count was gradual and distinctly slower than the symptomatic improvement.

In eight cases ready bruising persisted after recovery from acute symptoms. Four of the patients (34, 35, 36, 37) still showed slight thrombocytopenia and positive reactions to the tourniquet test and the intracutaneous test with snake venom two, two, four and thirteen years, respectively, after the original episode of purpura. In two cases (8, 10) ready bruising had persisted for five and eleven years, respectively, after recovery from the attack of purpura, but when these patients were examined ten and thirteen years, respectively, after the attack they were symptom free and their blood was quite normal. In ten cases followed from one

to eighteen years after the attack of purpura, no physical or hematologic signs of purpura were found at the end of the period of observation.

Examination of the individual case records failed to reveal any correlation between the severity or duration of the episode of hemorrhage and the subsequent course.

In eighteen cases (fig 5) more than one episode of bleeding occurred. These episodes in some cases were as many as four in number and appeared at intervals ranging from one month to as long as fourteen or

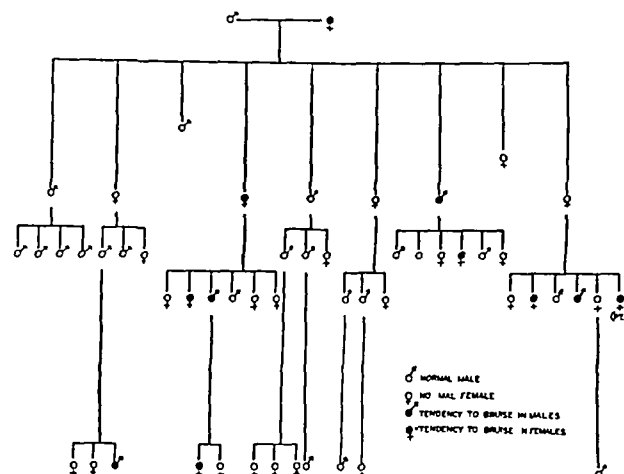


Fig 3—Family tree of a patient suffering from purpura haemorrhagica showing members in the family who tend to bruise very easily.

twenty-six years after the first episode. One patient (case 46) died of an intracranial hemorrhage eight and one-half years after the first episode of bleeding, after a symptom-free interval of six years. Another (case 28) was admitted fourteen years after a relatively mild attack of purpura. At this time the patient was pregnant and the purpura was severe. She died as the result of a diaphragmatic hemorrhage. In at least the preceding five years she had been completely free from symptoms, and two normal deliveries had occurred three and four years before the fatal attack of purpura.

Judging by the first episodes of bleeding, it would be difficult to distinguish the recurrent cases of figure 5 from the nonrecurrent cases of figure 4.

Symptomatic improvement following the first episode of bleeding was known not to have been accompanied by a "platelet crisis" in three cases (21, 23, 24). Nevertheless, in these and in six more cases recovery, as judged by symptoms, seemed to be complete. In the remainder of the cases grouped in figure 5, symptoms or signs of various degrees persisted. Subsequent episodes varied greatly in duration and severity and seemed to have no relation to earlier episodes or, for that matter, to the interval history.

Of the group of eighteen patients with recurrent disease, six have remained well and shown no abnormalities in the blood from three to eleven years after the last episode of bleeding. Six other patients (26, 38, 39, 40, 41, 42), however, have continued to show symptoms and signs in variable degree for many years and may be considered to have "chronic" purpura.

Death occurred in four of these eighteen patients. It is of interest that in three (cases 27, 28, 46) the fatal episode appeared after an interval of several years' freedom from symptoms. The fourth patient (case 45) died of cerebral hemorrhage following improvement of almost three months' duration.

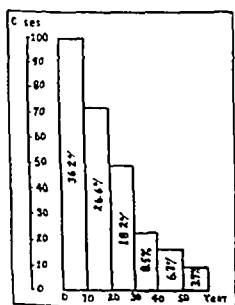


Fig 2—Age incidence of purpura haemorrhagica (271 cases)

to the tourniquet test and the intracutaneous test with snake venom two, two, four and thirteen years, respectively, after the original episode of purpura. In two cases (8, 10) ready bruising had persisted for five and eleven years, respectively, after recovery from the attack of purpura, but when these patients were examined ten and thirteen years, respectively, after the attack they were symptom free and their blood was quite normal. In ten cases followed from one

¹⁰ Witts L. J. The Hereditary Hemorrhagic Diathesis. *Guy's Hosp Rep* 82: 463 (Oct) 1912.

The cases in which splenectomy was carried out are shown in figure 6. In eight patients the operation was performed during the first episode of purpura. All had severe bleeding from the nose and mouth and four from the alimentary or genito-urinary tract as well. Thrombocytopenia was marked. All had received blood transfusions, two having been given five and

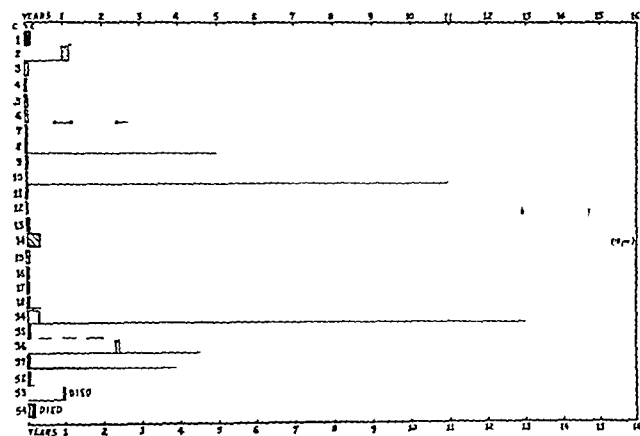


Fig. 4—Course of purpura haemorrhagica in twenty five patients in whom only one episode occurred. All were treated medically. The hollow blocks indicate mild episodes, the blocks with diagonal lines moderate episodes and the solid blocks severe episodes. The duration of the episode is shown by the width of the block. The time of observation is indicated horizontally. The dotted lines show that there have been no symptoms. Continuation of symptoms is indicated by the continuous lines, the thickness of which roughly parallels their severity.

six, respectively. In three cases (58, 59, 60) the bleeding had been of relatively short duration, from seven to eighteen days, before splenectomy was resorted to, but in two the bleeding was very severe. Operation was not performed on the remaining six patients until bleeding had continued for several weeks (from thirty to ninety-seven days, average fifty-eight days).

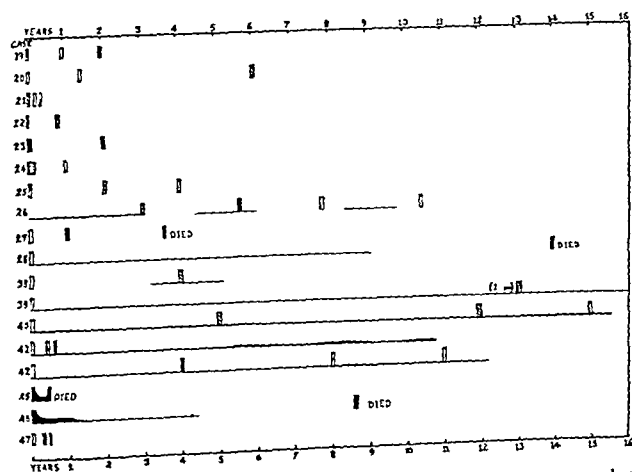


Fig. 5—Course of purpura haemorrhagica in eighteen patients in whom more than one episode occurred. All were treated medically.

In eleven cases operation was performed during later episodes of bleeding. The first episode had usually not been as severe as in the aforementioned eight cases, although in two (29 and 44) the first episodes had been very severe. Relapse occurred at various intervals after the initial episode, in one case (29), nine years afterward. On this occasion the patient's condition was decidedly grave, cerebral hemorrhage having occurred. Splenectomy was performed and complete recovery followed.

Subsequent episodes which led to operation were varied in duration (from two to 430 days). In all instances bleeding was severe. Operation was performed in the face of symptoms of intracranial hemorrhage in two cases, the one previously mentioned and one (case 31) in which the residue of the hemorrhage caused jacksonian epilepsy.

Three patients died after operation, two (33 and 62) of shock and the third (51) of multiple abscesses of the lungs twenty-four days after operation. Prompt improvement followed splenectomy in all but one of the remaining cases, and even in that one (50) there was an appreciable decrease in bleeding. Improvement was associated with a well marked increase in the

TABLE 1—Treatment of Purpura Haemorrhagica

	Splenectomy			
	Medical		Series from Four Clinics	
	No.	Percentage	No.	Percentage
Results following treatment during first episode				
(a) Immediate results				
Recovery	33	61.1	10	49.2
Improvement	19	36.2	5	24.8
Death	2	3.7	1	4.9
Totals	54		24	
(b) Late results				
Continued recovery (over 4 yrs.)	8	17.0	13	60.5
Continued recovery (less than 4 yrs.)	6	12.8	3	14.7
Symptoms or signs in varied degree	33	70.2	1	5.8
Totals	47		17	
Results following treatment during or after later episodes				
Continued recovery (over 4 yrs.)	5	22.7	3	45.0
Continued recovery (less than 4 yrs.)	3	13.6	9	100.0
Symptoms or signs in varied degree	10	40.5	21	100.0
Death	4	18.2	8	100.0
Totals	22		73	

* Includes Mayo Clinic, Rochester, Minn. (Giffin, 62 cases), Babcock Hospital, New York (McLennan and others, 6 cases), Presbyterian Hospital, New York (Brown and Elliott, 10 cases) and the authors' 19 cases.

platelet count in nine cases (55, 57, 58, 60, 30, 32, 44, 48, 49), but in four (56, 59, 61, 43) the platelets increased in number slowly.

The course of the disease in our sixty-two cases is summarized in figures 7, 8 and 9.

COMMENT

It is evident that the first manifestations of purpura haemorrhagica may be mild or fulminating. The initial symptoms may disappear, never to recur, or they may progress without interruption and cause grave anxiety. Relapses or recurrences may take place at unpredictable times and may be more serious or less acute than the original episodes. So variable is the course of this disease that it is impossible to predict with any degree of assurance what the subsequent progress of a given patient is likely to be.

The majority of our patients were treated by medical measures. Many received blood transfusions. Three patients were subjected to ultraviolet irradiation and four to roentgen irradiation over the spleen. In three of the latter splenectomy was ultimately performed.

Fifteen patients received no treatment other than the administration of iron when it was needed for the anemia. In seven recent cases snake venom therapy⁷ was employed.

In table 1 all these methods are grouped under the head of medical treatment and the results of such treatment are compared with those following splenectomy.

Recurrence, Relapses and Chronicity—In the patients treated medically, although immediate recovery or improvement was common after the first episode of bleeding, continuation of symptoms or signs in mild degree relapse or recurrence was not unusual. Continuation of the immediate recovery occurred in only 29.8 per cent (fourteen) of the forty-seven patients treated medically, regarding whom such information is available. The majority of the relapses (72 per cent) appeared within four years of the preceding episode, but, as previously mentioned, we have observed serious relapses after uneventful intervals of eight and one-half and even fourteen years. Only eight of the fourteen patients who showed continuous recovery have been followed for more than four years.

A curious feature regarding relapse was its frequency in females and relative rarity in males. Although only 56.5 per cent of our patients were

splenectomy. This fact is probably the more significant because some of the patients who were operated on were more seriously ill than those treated medically. Particularly impressive are the figures for continued recovery following splenectomy during the first episode of bleeding, in contrast to the frequency with which

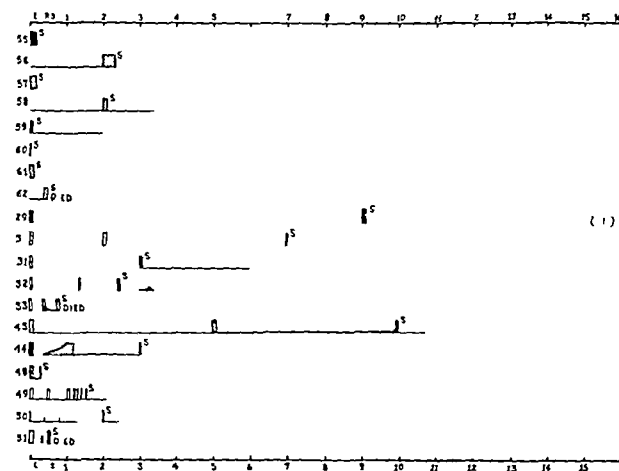


Fig 6—Course of purpura haemorrhagica in nineteen cases in which splenectomy was carried out. Splenectomy is indicated by the letter S.

TABLE 2—Relation of Rapid Increases in Number of Platelets to Recovery

Late Result	Patients Showing Rapid Increase in Platelets		Patients Showing No Rapid Increase in Platelets	
	During Medical Treatment	Following Splenectomy	During Medical Treatment	Following Splenectomy
No relapse	6	4	5	1
Gradual improvement		1		
Condition remained chronic				1
Relapse	1	2	7	1
Death		1	3	1
Unknown	1	1		
Totals	8	9	10	4

females, relapses occurred in twenty-five females and nine males, whereas complete recovery from the first attack occurred in four females and fourteen males. Nevertheless, in only eight instances were the recurrences associated with bleeding from the genital tract.

Relation of Rapid Increases in the Number of Platelets to Continued Recovery—In table 2 the available data concerning rapid increases in the number of platelets during recovery after medical care and after splenectomy are summarized. It appears that relapse was less common in cases in which a rapid increase in the platelets was associated with recovery than in those in which an increase was not observed. The point probably deserves no emphasis, however, for the total number of observations is small and such exceptions occurred as to cast doubt on the significance of platelet "crises."

Effects of Splenectomy—Because our own series of splenectomies is small in comparison with the number of patients treated medically, comparison is made in table 1 with the results of splenectomy in cases reported from three other clinics¹¹ as well.

In every respect except mortality following operation during the first episode of purpura the data favor

signs or symptoms of various degrees persisted when the patients were not operated on. The favorable figures for continued recovery following operation must, however, be weighted for the fact that 20.8 per cent of the patients died after operation, thus removing cases with a possibly less favorable course.

As has often been stated, operation during an acute episode is extremely dangerous. It should also be pointed out that after operation the condition of the patient may be critical even though death does not

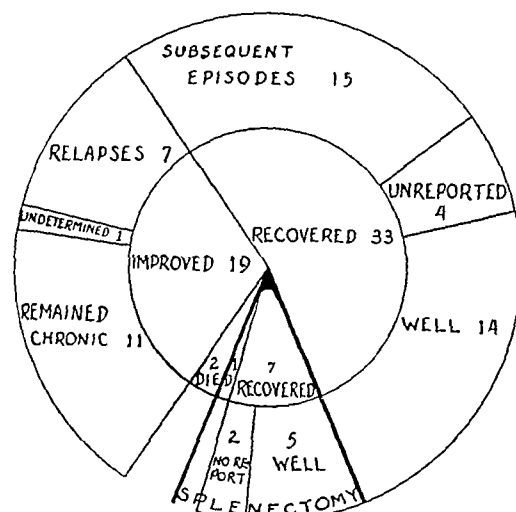


Fig 7—Immediate (inner circle) and late (outer circle) results in all sixty-two cases of purpura haemorrhagica. Further details are given in figures 8 and 9. In these charts subsequent episodes refers to a return of symptoms and signs after apparently complete recovery; the cases which remained chronic are those in which symptoms and signs continued although no marked exacerbations developed. When exacerbations occurred in chronic cases they are referred to as relapses.

occur. One of Giffin's¹¹ patients had a stormy convalescence and required eleven transfusions. Three other patients in his series had a considerable amount of bleeding from the operative wound, although none of them required transfusion. Shock, acidosis, severe

11 Giffin, McLean, Kreidel and Caffey, Brown and Elliott.

epistaxis and various infections developed postoperatively in Brown and Elliott's⁵ patients. One of our patients had severe nosebleed nineteen days after operation.

Somewhat less impressive, although still definitely favoring splenectomy, are the results of operation during or after second or later episodes of purpura. Continued recovery was more common than in the

splenectomy the platelet count was not below the "critical level." Furthermore, in patients with thrombocytopenia, symptoms were common, whereas when the platelet count was not significantly reduced, symptoms were unusual.

Association of Purpura and Pregnancy—Purpura was associated with pregnancy in four of our cases. One fatal relapse occurred during pregnancy, as already mentioned (case 28). This patient had had two preceding normal deliveries. Another patient (case 25) had had three episodes of purpura, at the ages of 22, 24 and 26, and had also had two normal deliveries at the ages of 21 and 23. She appeared again at the age of 30, while pregnant.

In two instances purpura appeared for the first time during pregnancy.

In one patient (47), a primipara, cutaneous purpura first appeared during the seventh month.

In the second case (54) the disease was more severe and the patient died in the fifth month of pregnancy of cerebral hemorrhage. Pregnancy nine months before had been uneventful.

CONCLUSIONS

The dramatic subsidence of bleeding which often follows splenectomy has led many writers to advocate this operation in all cases of purpura haemorrhagica. Examination of the most enthusiastic case reports reveals the fact that such opinions are usually based on a limited experience. The data here presented are offered with the object of indicating the course of purpura haemorrhagica in patients treated by medical measures and in order that they may serve as a basis for comparison in evaluating other forms of treatment. It is evident that the course of the disease is varied so that all forms, from a simple, mild episode of bleeding

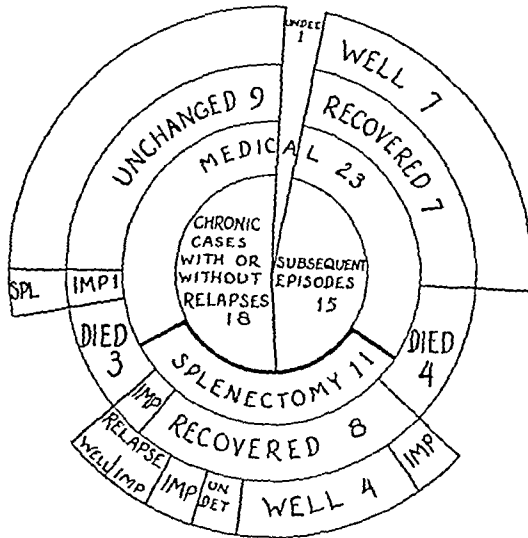


Fig. 8—The later course of the thirty four patients in whom symptoms again developed or who showed continuous symptoms after the first attack of purpura. Spl indicates splenectomy, medical implies nonsurgical treatment, imp improved, undet undetermined course.

patients treated medically, and continuation of symptoms or signs was less frequent. In this group even the figures on mortality tend to favor splenectomy. Judging by the data presented in table 1, it would appear that, if but one episode of bleeding has occurred, the chances for continued recovery are less than one out of three for patients treated medically and almost three out of four if operation has been performed. Against this favorable outlook must be weighed the dangers of operation. When several episodes have occurred the chances for continued recovery are again one out of three for patients treated medically and are somewhat better than even if splenectomy has been performed.

It might be added that serious complications are not always prevented by splenectomy. None have so far ensued after operation in our cases, but one of Giffin's⁶ patients died five years after splenectomy as the result of vaginal bleeding at puberty. Again, Whipple² cited three instances of intracranial hemorrhage following splenectomy, and McLean and his co-workers⁵ and Brown and Elliott⁵ each recorded one such case. It has been suggested that relapses following splenectomy are due to the presence of accessory spleens.¹²

The Platelet Count Following Splenectomy—It is often stated that hemorrhage does not recur after splenectomy even though, after an early marked increase, the platelet count again falls to "critical" levels.

Our observations agree with those of Anschutz¹³ in his study of fifty cases. In the majority of cases, after

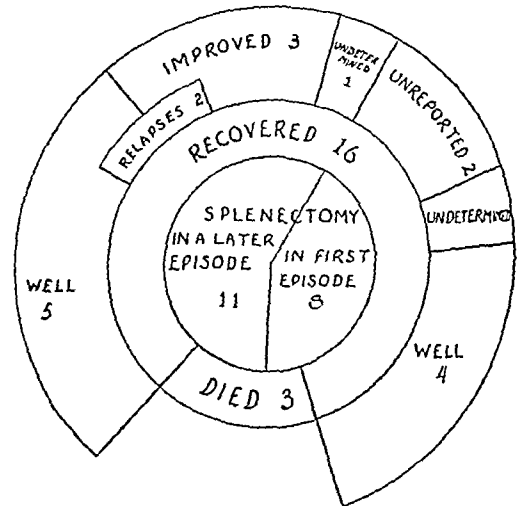


Fig. 9—Results following splenectomy in all nineteen patients treated. These cases are included in figure 7 and eleven are shown again in figure 8.

to a long continuous progression or a sudden recurrence of the fulminating disorder many years after the first episode, may occur.

In our opinion, there is no adequate basis for considering that by splenectomy the fundamental cause of purpura haemorrhagica is removed. In view of the available clinical and experimental¹⁴ studies and the

¹² Morrison Maurice, Lederer Max and Fradkin W. Z. Accessory Spleens. Their Significance in Essential Thrombocytopenic Purpura Haemorrhagica. *Am J. M. Sc.* 176: 672 (Nov.) 1928.

¹³ Anschutz W. Ueber Milzexstirpation bei Thrombopenien mit besonderer Berücksichtigung der akuten Fälle. *Beitr. z. klin. Chir.* 142: 1 1928.

¹⁴ Bedson S. P. The Effect of Splenectomy on the Production of Experimental Purpura. *Lancet* 2: 1117 (Nov. 29) 1934.

observed effects of splenectomy on this disease, it seems more plausible to consider that by splenectomy the cause of the disease is not attacked but an important site for the destruction of platelets is removed. Splenectomy is in this interpretation, the most radical of the methods for the symptomatic treatment of purpura haemorrhagica. If this is admitted, the indications for operation can be stated in relatively simple terms.

INDICATIONS FOR SPLENECTOMY

1 If the bleeding is severe and other more conservative measures have not been followed by remission, operation should be considered. In cases of this kind, patience is an important qualification for the attending

TABLE 3—Results of Reexamination of Patients Following Splenectomy

Case No.	Time After Splenectomy	Clinical Condition	Platelet Count per C. Mm.	Bleed. Ing. Time Min.	Clot Retraction	Tourniquet Test	Snake Venom Intracutaneous Test
60	3 days	Excellent	1 300 000	3½	Good	+	
43	½ year	Excellent	82 000	1½	Good	++	
50	½ year	Good	210 000	6	Good	Neg	Neg
49	½ year	Slight bruising and purpura	75 000	9½			
30	1 year	Good	200 000	1½	Good	+	
53	1½ years	Good	160 000	4	Good	++	Neg
59	2 years	Slight bruising bleed ing gums	1.6 000	1			
31	3 years	Moderate bruising	44,000	10	Poor		
57	5 years	Good	180 000	4		+	Neg
32	7 years	Good	188 000	2	Good	Neg	
48	7 years	Excellent	230 000	2¼	Good	Neg	
56	7 years	Excellent	234 000	2¼	Good	Neg	Neg

physician because (1) remission from an acute episode is the rule rather than the exception and (2) splenectomy is dangerous in cases associated with severe hemorrhage.

The decision as to the correct time for operation is a difficult one and the surgeon as well as the physician should have an opportunity to observe the patient early. Obviously one should not wait in deciding on splenectomy until the patient is a poor surgical risk. When adequate blood for transfusions is available, operation may perhaps be delayed longer than when it is scarce. It must be borne in mind that blood for transfusions may be required during and after the operation as well as before it.

2 Recurrences are more common in females than in males. Other factors being equal, operation should be considered more readily for girls and young women than for males.

3 If growth and development or the economic or social status of the patient is seriously impaired by recurrences of bleeding, even if the hemorrhage is only relatively mild, operation may then be considered advisable.

It should be remembered, first, that there is a genuine operative risk in splenectomy—danger of hemorrhage, shock, infection and postoperative pneumonia—and, second, that this risk is much lower during quiescent periods.

Little need be said concerning other measures used in the treatment of purpura haemorrhagica. We consider transfusion the most important. Our experience with snake venom therapy has been limited to seven

cases. While this experience has been favorable, we are not prepared to comment on this form of treatment at present. Irradiation of the spleen has recently been advocated again¹⁶ and seems to be worthy of trial. A few cases have been reported as favorably influenced by the administration of cevitic acid,¹⁷ but in other cases this treatment has failed.¹⁸ Many writers have stressed the importance of the removal of foci of infection.¹⁹ All these measures may well be tried. In cases in which relapse has followed splenectomy, it seems advisable to use these methods rather than to explore for accessory spleens.

SUMMARY

Sixty-two cases of purpura haemorrhagica were observed 64.5 per cent for longer than three years after the initial symptoms. Splenectomy was performed in nineteen of these cases.

The onset of the disease was found to be predominantly in childhood or adolescence. The sex incidence was almost equal. Negro patients in our series were rare. A family history of bleeding was noted in thirteen instances.

The course of purpura haemorrhagica as illustrated by these cases is extremely variable.

With medical care, recovery from an acute episode is the rule rather than the exception. Recurrences, however, are common. They occurred much more often in females than in males. A fatal relapse occurred in one patient fourteen years after the initial episode.

In our opinion, there is no adequate evidence for considering splenectomy as specific treatment for purpura haemorrhagica. It is the most radical of the methods for the symptomatic treatment of this disorder. There is an operative risk, and recurrences may follow operation. Nevertheless, splenectomy is decidedly the most effective of the therapeutic methods hitherto proposed.

ABSTRACT OF DISCUSSION

DR ALLEN O. WHIPPLE, New York. Purpura haemorrhagica is a middle ground disease. It is our feeling at the Presbyterian Hospital and at the College of Physicians and Surgeons that these diseases of the spleen should be studied by the combined group of physicians and surgeons and roentgenologists because it is only by the combined study that we can really arrive at fair estimate and the final evaluation of the results of treatment. This is well brought out by the authors in their discussion of this therapy. In the twenty-one years since the first spleen for purpura haemorrhagica was removed in Prague there has been no other paper as comprehensive in the follow-up period and in the careful analysis as this paper. In estimating our results at the Vanderbilt Clinic and the College of Physicians and Surgeons, we have felt that an accurate diagnosis was the most important primary consideration. To get as accurate a diagnosis as possible, we feel that the blood studies are exceedingly important and should be done by a group of expertly trained hematologists. The next important factor is the follow up of these cases, which should be done by both physicians and surgeons. We have a smaller

16 Mettler, Stacy R., Stone, Robert S. and Purviance, Katherine. The Effect of Roentgen Ray Irradiation on Platelet Production in Patients with Essential Thrombocytopenic Purpura Haemorrhagica. *Am. J. M. Sc.* 191 794 (June) 1936.

17 Boger, A. and Schroder, H. Arrest of Severe Hemorrhages in All Forms of Hemorrhagic Diathesis and of Hemophilia by Parenteral Administration of Vitamin C. *Munchen med. Wchnschr.* 81 1935 (Aug. 31) 1934. Miller, D. K. and Rhoads, C. P. Ascorbic Acid in the Treatment of Thrombocytopenic Purpura. *Proc. Am. Soc. Clin. Investigation J. Clin. Investigation* 15 462 (July) 1936.

18 Stephens, J. J. and Hawley, E. E. The Relationship of Vitamin C to the Hemorrhagic Diatheses. *J. Lab. & Clin. Med.* 22 173 (Nov.) 1936.

19 Giffin, Jones and Tocantins.

series of cases than that reported by the authors, and these were presented in a previous communication by Drs Brown and Elliott of the Spleen Clinic. In eleven of our patients, splenectomy has been done. They have been followed for an average period of five and one-half years. Five of them have been followed over six years, the longest follow up being eleven years and the shortest one year. The eleven nonsurgical cases are presented as a control group. They have been followed for an average period of four years, the longest follow up being eleven years and the shortest nine months. We have divided these into the completely arrested and the markedly improved. In the surgical group there were five and in the nonsurgical group three. One case was marked as improved in the surgical group and two in the nonsurgical group. There were no patients showing improvement in the surgical group, but five of the nonsurgical group continued to show their symptoms as they had previously, and they had been advised to have an operation but had refused.

DR GEORGE R MINOT, Boston. I am glad that Dr Wintrobe and his associates pointed out what seems to me frequently is little appreciated, namely, that the course of the disease is varied, it is one of remission and exacerbation. Do the cases of very short duration, in which frequently recovery occurs spontaneously within two weeks, represent the same disease as cases that may last a lifetime? We don't know. Certain drugs, such as sedormid and quinine, and occasionally food allergy may induce thrombopenia and may tend to create an intermittent type of disease. Such cases, of course are not suitable for splenectomy because the proper treatment is to remove the offending substance. One must distinguish conditions in which thrombopenia is a symptom. Purpura haemorrhagica may be the presenting symptomatology for as long as two months in cases of cancer widespread throughout the body, and occasionally the same may occur in cases of liver disease. Refractory anemias, discussed in the Section on Practice of Medicine by Dr Rhoads, are conditions to rule out. Leukopenia is characteristic. Beware of subjecting patients with leukopenia to splenectomy for purpura haemorrhagica, except in a rare instance. I have had occasion to see two cases which were proved by biopsy to be myelosclerosis, in which "idiopathic" purpura haemorrhagica appeared to be the correct diagnosis for over three years. In one, for three and one-half years there was no significant degree of anemia. In that case splenectomy was done when anemia began to increase. The patient is now living three and one-half years after splenectomy but continues to live by multiple transfusions with a red cell level of about two million. Relapse of purpura haemorrhagica is certainly commoner in females than in males. It is possible that this is because there are rhythmic fluctuations of the blood platelets in the menstrual cycle, they frequently fall just before menstruation begins and rise abruptly soon after the onset of the menses. Cases of intermittent purpura haemorrhagica associated with the menses occur. It was reported in *Naturwissenschaften* 24 314, 1936 that the injection in dogs of large amounts of progynon-B can induce drops of the blood platelets without alteration of the red or white cells. These various facts lead one to speculate on the possible role of some hormone control of the blood platelet level. The authors mentioned cases that developed during pregnancy. I have seen the same phenomenon, but I have also seen chronic cases improve during pregnancy. Again one wonders what role if any, altered endocrine function plays in these circumstances.

DR EDWARD M HANRAHAN, Baltimore. I noted that Dr Whipple was also interested in a group of cases for which there is no satisfactory name. They really form a middle group. Some have been called chronic. If one might use such a term as "threshold of symptoms," one might say that this particular group has a low threshold. Then the question might be raised, as Dr Minot raised it, whether or not this group really presents the same disease. At any rate, it is this group, continuously smoldering, constantly showing symptoms in greater or lesser degree, that challenges accurate diagnosis and renders judgment difficult as regards treatment. I notice that

the results of the authors correspond closely to ours. We have not had a late death after operation, although deaths are plentiful in the literature. The diagnosis of the disease is, of course, by exclusion, by the elimination of every other source of trouble that could give rise to a symptomatic purpura. We do not know the cause of the disease. We have had some success with the use of snake venom as a form of medical treatment, although the results have been of such duration that we are not prepared to comment more than that.

THE CLINICAL AND PATHOLOGIC IDENTITY OF PHEOCHROMOCYTOMA

REPORT OF A CASE

ARTHUR H WELLS, MD

AND
P G BOMAN, MD

DULUTH, MINN

During the last decade, the dramatic and diagnostic clinical manifestations of a new disease entity have been established beyond a doubt. Although isolated important characteristics of this malady were described earlier by several authors,¹ the first complete study of a classic case is that of Labbe, Tinel and Doumer in 1922. Since then, with ever increasing frequency, twenty-seven new case reports, all fundamentally clinical and pathologic duplicates, have appeared in the literature. The characteristic symptoms of thirteen² of these patients completely disappeared following the surgical removal of a benign tumor composed of the epinephrine-producing cells normally found in the

From the Department of Pathology, St. Luke's Hospital. Reported at the thirtieth annual meeting of the American Association for Cancer Research in Chicago, March 24, 1937.

1 These include among others

Manasse P. Ueber die hyperplastischen Tumoren der Nebennieren. Virchows Arch f. path. Anat. 133 391-404 (Sept.) 1893.
Neusser E. and Wiesel J. L. Die Erkrankungen der Nebenniere in Nothnagel. Spezielle Pathologie und Therapie ed 2 Vienna Alfred Holder 1910 p. 97.
Helly K. L. Zur Pathologie der Nebenniere. Munchen med. Wchnschr. 60 1811-1812 (Aug. 19) 1913.
Orth J. J. Ueber eine Geschwulst des Nebennierenmarks nebst Bemerkungen über die Nomenklatur der Geschwulste. Sitzungsber. d. deutsch. Akad. d. Wissensch. Berlin G. Reimer 1914.

2 Labbe M, Tinel J. and Doumer. Crises solaires et hypertension paroxystique en rapport avec une tumeur surrenale. Bull. et mem. Soc. med. d. hop. de Paris 46 982-990 (June 23) 1922.

3 These include

Mayo C. H. Paroxysmal Hypertension with Tumor of Retroperitoneal Nerve. Report of a Case. J. A. M. A. 80 1047-1050 (Sept. 24) 1927.

Von der Muhl R. Contribution a l'etude des paragangliomes de la surrenale. These de doct. Lausanne 1928.

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adrenal medulla. Necropsy or fetal surgery revealed the same neoplasm in the remainder of this group.⁴

Fifty-five additional reports of tumors of the same cells have been found. These may be divided into three groups of nearly equal size. In one no clinical history was given while in another the clinical manifestations noted were not at all suggestive of the disease. In the third group a fragmentary variety of suggestive symptoms was recorded. Critical reviews of the literature on the subject have been written by Wahl, Rabin, Eisenberg and Wallerstein, Lazarus and Eisenberg and Belt and Powell.

CLINICAL IDENTITY

Although pheochromocytomas have been found in children, the disease is primarily one of adults and it has an approximately equal sex distribution. Of possible importance among the factors precipitating the typical paroxysm is the accumulation of epinephrine in the tumor during rest of the patient with its release on physical activity, especially by flexion or torsion of the trunk. Psychic influences and extra-adrenal hormonal changes may play a role.

The occurrence of acute unpredictable attacks, lasting from thirty seconds to two or three hours, is the dominating feature. The patient suddenly complains of palpitation the severity of which may overshadow all other symptoms. There may be bradycardia or tachycardia and precordial pain or a sense of compression. The blood pressure taken at the onset of a paroxysm rises rapidly from normal levels to a systolic pressure of from 200 to 300 mm of mercury. In any given case the blood pressure may vary from day to day and from hour to hour, but it is generally normal between attacks. Later in the disease hypertension occasionally becomes permanent, and there may be superimposed paroxysms. During severe attacks there may be evidences of failure of the left ventricle with cyanosis, coughing, and frothy, blood tinged sputum. The respiratory rate may increase to 35 per minute and there is frequently a sensation of suffocation or choking. Cardiac hypertrophy, palpitation and dyspnea on

physical exertion and signs of congestive heart failure may develop late in the course of the disease.

A sudden transient spasm of arterioles accounts for many of the widespread manifestations. The skin suddenly becomes pale and cold at the onset of an attack to be followed in a few cases by flushing and profuse perspiration over the trunk. Numbness and tingling or pain and at times tremor are noted in the extremities. There may be a sensation of fullness in the head, cephalalgia, vertigo, low grade fever, muscae volitantes, blurring of vision, mydriasis and exophthalmos. Anxiety is often a prominent feature. Epigastric discomfort or pain, nausea and vomiting are common. As a result of relief from symptoms following emesis the patient frequently induces it early. Glycosuria has been noted and a two or three hour suppression of urine has been described.



Fig 1—Cut surface of neoplasm with a cap of normal adrenal tissue

Although these paroxysms may last only a few minutes some patients are left weak, tired and at times prostrated. The attacks tend to increase in severity and frequency, finally occurring several times a day and becoming completely incapacitating. Patients with the disease have been observed from a few months to twelve years. Cerebral hemorrhage, chronic congestive heart failure, acute left ventricular failure, Addison's disease, adrenal hemorrhage and probable hyper-epinephrinism have been important causes of death. With a few exceptions, even minor surgical procedures have been accompanied by serious and frequently fatal shock.⁶ The common and most likely clinical diagnostic errors have been essential hypertension, cardiac neurosis, hyperthyroidism, diabetes mellitus and renal tumor.

PATHOLOGIC IDENTITY

Neoplasms of chromaffin cells of the adrenal medulla and of the paraganglia located retroperitoneally along the vertebral column are the only proved tumors that have given rise to the typical clinical syndrome. Tumors of other sites, composed of the same or very similar cells e.g., the carotid body, may in time be found the basis of similar clinical manifestations.

⁶ These include among others: Masson P and Martin J F. Paragangliome surrenales. *etude d'un cas humain des tumeurs malignes de la medulla surrenale*. Bull A franc p l'etude du cancer 12: 135 1923. Helly¹, Shipley², Porter M F and Porter M F Jr³, Van Oudenhoven and Appelmans⁴, Collier Field and Durant⁵, Belt and Powell¹, Burgess, Waterman and Cutts¹.

⁴ These include: Biehl M and Wichels P. Physiologische pathologisch anatomische Betrachtungen in Anschluss an einen Fall von Paragangliome beider Nebennieren. *Virchows Arch f path Anat* 257: 182 201 (April) 1925.

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⁵ These include: Wahl H R. Neuroblastomata with a Study of a Case Illustrating the Three Types that Arise from the Sympathetic System. *J M Res* 30: 205 260 (May) 1914.

Lazarus J A and Eisenberg A A. Tumors of Adrenal Gland. *Report of Two Cases of Paraganglioma of Adrenal Gland*. *J Urol* 27: 126 (Jan) 1932.

Eisenberg A A and Wallerstein H. Pheochromocytoma of the Suprarenal Medulla (Paraganglioma). *Arch Path* 14: 818 836 (Dec) 1932.

Belt and Lowell¹, Rabin⁴.

Thus far there have been seventeen cases of malignant pheochromoblastoma reported, and only one of the patients suffered from the characteristic paroxysms. No crises have been noted in patients with neoplasms of the primitive neuroblastic cell precursors or the closely related ganglion cells of the adrenal medulla and sympathetic ganglions unless the tumor of Rogers⁸ is composed entirely of ganglion cells. It is more likely that this tumor contains a mixture of adrenal medullary cells similar to the case of Rosenthal and Willis.⁹ Pheochromocytomas have been equally distributed between the right and left adrenal glands. They rarely occur bilaterally and occasionally arise from paraganglions. The tumor has been too frequently associated with neurofibromatosis of the skin to be fortuitous.



Fig. 2—Section under low power

The chromaffin cells are distinguished from all other cells by their affinity for chromium salts. Apparently the epinephrine present in their cytoplasm reduces these salts to form an insoluble peroxide of chromium, which appears in the cytoplasm as fine brown granules. The epinephrine oxidizes spontaneously, so that tests (of which there are several) depending on its presence must be performed on fresh tissue. Several chemical analyses, including one extraction of the crystalline product,¹⁰ have demonstrated the presence of from 0.3 to 2 Gm. of epinephrine per hundred grams of neoplastic tissue. Although tumors weighing up to 1,000 Gm. have been described, the great majority are quite small,

many measuring from 5 to 10 cm. in diameter. They are encapsulated and rounded, and they frequently show some cystic degeneration of their otherwise solid homogenous, light brownish cut surface. The moderate cellularity, the relatively large polyhedral cells, with extreme anisocytosis and poikilocytosis in some areas and an atypical alveolar arrangement of cells in others are characteristic. The cytoplasm is abundant, vacuolated and finely granular, with characteristic inclusion bodies. The moderate sized nucleus may be multiple and contains a remarkably large nucleolus. The absence of fat, lipid and glycogen in the cytoplasm is an aid in differentiating the neoplasm from that of cortical origin. It is entirely possible that these tumors may be found to contain ganglion cells and neurocytes, as well as the chromaffin cells.

TREATMENT

Once the clinical diagnosis is established, the surgeon may find it difficult to decide which side of the abdomen to enter. The important aids in previous cases have been the palpation or x-ray demonstration of a mass or dislocated kidney, and in the production of symptoms by pressure on one side or the other. In any case, the anterior approach of Collier, Field and Durant³ is highly recommended. A 3 inch midline incision just above the umbilicus permits localization of the tumor on one or both sides. Then a transverse incision from the medial incision to the peritoneal gutter on the proper side makes possible early clamping of the blood supply of the neoplasm without much manipulation, thus avoiding the expression of epinephrine into the general circulation. Ether is a satisfactory anesthetic, while nitrous oxide and spinal anesthesia are contraindicated. In all cases the surgeon should be prepared to give blood transfusions during the operation because of the high frequency of severe shock in these patients. Post-operative hypo-epinephrism has not as yet been recognized. However, much remains to be learned about the cause of shock in these patients.

REPORT OF CASE

A woman, aged 30, a housewife and school teacher was admitted to St. Luke's Hospital in the service of Drs. D. F. Pennie and Robert Graham, through whose permission we are presenting this report, complaining chiefly of abdominal pain. Except for childhood diseases and bronchitis some years ago she had been in good health until about one year ago, when she began noticing sudden attacks of palpitation of only a few moments' duration. These were ushered in by severe pounding of her heart, 'like a sledge hammer,' and a 'peculiar feeling which ran over her body.' The attacks occurred frequently after periods of excitement, although they were often experienced at night. She had to give up watching basketball games and other exciting amusements because they left her worn out. A letter from home or unexpected company might precipitate an attack. There seemed to be no relationship to the menses or to physical work. She had noticed that she tired rather easily and was 'always ready for bed.' Otherwise she was in excellent health between attacks and led an active life. She might be sitting in a chair reading when a seizure began. She would anxiously ask her husband to look at her pale, cold hand and feel her pounding heart. At times spots appeared before her eyes. She became nauseated and by inducing vomiting she gained some relief.

Although the attacks lasted only from thirty seconds to two or three minutes, they left her so weak and tired that she had to go to bed for several hours. At first a severe headache developed after the episodes but this symptom became much milder during the last few months. The seizures occurred once or several times in a month and had been gradually increasing in frequency and severity.

Although it is not known that she was ever examined by a physician during an attack, blood pressures ranging from normal

⁷ McKenna and Hines.²
⁸ Rogers, Evelyn. Paroxysmal Hypertension Associated with a Ganglioneuroma of the Suprarenal Medulla. *Am. Heart J.* 8: 269-274 (Dec.) 1932.

⁹ Rosenthal, D. B. and Willis, R. A. Association of Chromaffin Tumors with Neurofibromatosis. *J. Path. & Bact.* 42: 599-603 (May) 1936.

¹⁰ Kelly, Piper, Wilder and Walters.³

to as high as 160 mm of mercury systolic and 110 mm diastolic were recorded. Physical examinations were otherwise entirely negative except for tortuous and spastic retinal arteries. Laboratory examinations, including complete blood counts, urinalysis, Wassermann test and basal metabolic rate, gave normal results. She was treated for essential hypertension.

The illness resulting in her hospitalization was incidental to the adrenal tumor and its manifestations but must be briefly related. The day before her death she left an evening theater performance early because of "feeling sick." She slept very little that night because of pain in the lower part of the abdomen and nausea, not associated with vomiting. The next morning she had a temperature of 100 F, tenderness and slight muscle rigidity in the right lower quadrant. She was more comfortable with her right leg flexed. Without further delay she was admitted to the hospital and rushed to the operating room.

The extraordinary succession of events which followed led to the tragically delayed probable diagnosis of pheochromocytoma before the necropsy was performed and before the clinical history of paroxysmal palpitation was obtained. She was given ethylene anesthesia and had not relaxed at the onset of the operation when her blood pressure began to rise and she became cyanotic. The anesthetic was discontinued and oxygen given in its place. The blood pressure rose to 180 systolic and 140 diastolic in ten minutes. Then it suddenly disappeared altogether. Many stimulants were given including several ampules of epinephrine and ephedrine. An acutely inflamed appendix was removed and artificial respiration begun. The patient was cyanotic and pulseless, breathed rapidly and shallowly, and had exophthalmos and dilated pupils. At times it was difficult to determine whether she was breathing at all. There were several generalized convulsions. At the end of an hour and a half of progressive loss of ground she was placed in a Drinker respirator, where in the course of ten minutes, her lips and cheeks became pink and she regained consciousness, moved her arms and legs and answered questions intelligently. The pupils remained dilated and there was a marked exophthalmos. An early attempt to let her breathe without the artificial help failed after a few moments. She was kept in the respirator for two hours and then removed to her room, where in the course of a few moments she became cyanotic and dyspneic and died.

At necropsy the patient was found to be remarkably well developed. Her previous exophthalmos had disappeared. A careful search failed to reveal significant gross or microscopic lesions other than a neoplasm of the right adrenal medulla (fig 1), moderate pulmonary congestion and edema, and a small abscess in the wall of the cecum near the stump of the recently removed appendix. The arterioles of the 325 Gm heart and of other organs were not abnormal.

The tumor had a complete thin fibrous capsule to which was attached a thin layer of atrophic cortical cells over one hemisphere. The latter were continuous with approximately one half of an otherwise normal suprarenal containing both cortical and medullary cells. The cut surface of the neoplasm was cystic and its color was tan with a faint tint of yellow. It turned dark brown after a few hours exposure to light. With portions of other organs from the same body as controls the adrenal tumor was assayed by the Folin Cannon and Denis¹¹ method. It contained 200 mg or 1 per cent epinephrine. The chromaffin reaction was positive. Histologically the neoplasm was moderately cellular, with a rather inconspicuous vascular stroma. The cells resembled those of the normal adrenal medulla except that they tended to be larger and occasionally had multiple nuclei (figs 2 and 3). The histologic diagnosis was confirmed by Dr E. T. Bell of the Department of Pathology of the University of Minnesota Medical School.

COMMENT

The necessity of developing more specific means of recognizing patients with the milder manifestations of the pheochromocytoma syndrome is obvious. The probable explanation of the crisis is a transient hyperepinephrinemia, resulting in seizures of sympathetic hypertonia. In lieu of a reliable method for determining blood epinephrine to prove this theory and to aid

in the diagnosis of the disease, Dr Irvine McQuarry¹² suggests the determination of blood potassium during attacks. It has been demonstrated by D'Silva,¹³ Schwarz,¹⁴ and Camp and Higgins¹⁵ that serum potassium rises as much as 86 per cent with the intravenous injection of epinephrine. Repeated studies should also be made of the blood sugar and the leukocyte count during attacks.

Since it may be difficult to examine the patient during an attack, some change in the patient's reaction to the injection of epinephrine may prove useful. Coller Field and Durant⁸ found their patient hyposensitive to epinephrine and suggest the use of the careful methods of Jensen¹⁶ in future cases. The complete disappearance of the typical syndrome during pregnancy in the



Fig 3—Section under high power

case of Kelly, Piper, Wilder and Walters⁹ and the transient relief with the onset of pregnancy in the case of Burgess, Waterman and Cutts⁴ suggest not only a possible means of diagnosis but also preoperative therapy through the use of gonadotropic substance or other endocrine products.

An extensive discussion of the relationship between excessive epinephrine secretion and the development of essential hypertension may be found in the literature. Whatever else may be said, it must be admitted that benign tumors of epinephrine-producing cells will cause spasms of the arterioles, ultimate chronic hypertension

- 12 McQuarry, Irvine. Personal communication to the authors.
13 D'Silva, J. I. Action of Adrenalin on Serum Potassium. *J Physiol* 82: 393-398 (Nov. 12) 1934. 86: 219-228 (Feb. 8) 1936.
14 Schwarz, H. Einwirkung des Adrenalins auf den Kaliumgehalt des Blutes. *Arch f exper Path u Pharmacol* 177: 628-634 1935.
15 Camp, W. J. R. and Higgins, J. A. Role of Potassium in Epinephrine Action. *J Pharmacol & Exper Therap* 57: 376-387 (Aug.) 1936.
16 Jensen, J. The Adrenalin Test in Hypertension. *Am Heart J* 5: 765-780 (Aug.) 1930.

11 Folin, Otto; Cannon, W. B. and Denis, W. A. A New Colorimetric Method for the Determination of Epinephrine. *J Biol Chem* 13: 477-483 1913.

and sclerotic changes in the arterioles and may terminate by one of the several modes of death common in essential hypertensive patients

SUMMARY

1 With the dissemination of the knowledge of the symptomatology resulting from benign tumors of epinephrine-producing cells during the last decade there has been a constant increase in the frequency of recognition and surgical cure of this new disease entity

2 Unpredictable paroxysms of hypertension associated with symptoms of palpitation, precordial sensations, epigastric discomfort, nausea, vomiting, pallor and coldness of extremities, glycosuria, cephalalgia and anxiety, in a patient apparently normal between attacks, are characteristic of the earlier stages. Later, chronic hypertension may develop as well as its usual sequelae

3 The characteristic surgical shock is less likely to occur during the excision of the tumor by selecting ether anesthesia, using an anterior operative approach, and by the use of blood transfusions

4 In the case reported, the typical clinical syndrome was not recognized by five physicians. The patient subsequently died of operative shock following the removal of an acutely inflamed appendix

TRIPLE PRIMARY CARCINOMA IN OTOLARYNGOLOGY

J C DROOKER M.D.

BOSTON

Triple primary carcinoma is a very rare entity. Warren and Gates¹ published statistics on 1,259 verified cases of multiple primary neoplasms which were taken from the records of approximately 115,000 postmortem examinations. In these 1,259 cases there were only thirty-seven instances in which there were more than two primary malignant tumors in one individual. All thirty-seven were triple carcinomas. This made an incidence of 2.9 per cent of primary triple neoplasms in their series of multiple primary tumors. On the basis of all statistics available both here and on the continent the frequency of multiple malignancy is 1.84 per cent of cancer cases. At the Mayo Clinic, where the incidence of malignancy is probably higher than in general hospitals, Hanlon² recently added forty-nine cases of double primary carcinoma, but in no one patient did he find a record of three primary neoplasms.

CLASSIFICATION

The criteria necessary for the diagnosis of multiple primary malignancy were first laid down by Billroth³ in 1860, seventy-seven years ago. He postulated that

- 1 Each tumor must have a different histologic appearance
- 2 Each tumor must arise in a different site
- 3 Each tumor must produce its own metastases

Meicaanton⁴ in order to rule out the possibility of recurrences added a fourth requirement, stating that there must be no reappearance of the tumors after removal.

From the Mosher Laboratory, Massachusetts Eye and Ear Infirmary. Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

¹ Warren, Shields and Gates, Olive, Multiple Primary Malignant Tumors, A Survey of the Literature and a Statistical Study, *Am J Cancer* 16: 133-8, 141-4 (Nov.) 1932.

² Hanlon, F. R., Multiple Primary Carcinomas, *Am J Cancer* (suppl.) 15: 2001-2012 (July) 1931.

³ Billroth, C. A. T., *Chirurgische Klinik, Vienna and Berlin* 1879, p. 258, cited by Warren and Gates.

⁴ Mercanton, F., *Rev. med. de la Suisse Rom.* 13: 229, 1893.

It is now the belief of many pathologists that these standards are too restrictive. For example, in criticism of the first statement in the tumors from two different organs the cells may be histologically the same and yet the tumors may be entirely independent of each other. In criticism of the third statement, it is known that there are malignant tumors which do not ordinarily have metastases, e. g., basal cell carcinoma and adenocarcinoma of the fundus of the uterus.

It is, however, justifiable to have a fairly rigid set of standards if reliable data are to be compiled, for it would otherwise be easy to include many instances of metastatic tumors in paired organs such as those of the ovary and breast and thus call them double primary malignant growths, or a far distant metastasis from a gastric carcinoma to the ovary might be called a primary tumor.

There are undoubtedly many instances in which any broad classification is inadequate. A case may present itself in which one tumor occurs and metastasizes, yet, when the patient comes under the observation of the clinician, the metastatic lesion may appear more advanced than the primary tumor. This occurs most frequently in tumors of the pharynx. It is seen in cases of transitional cell carcinoma of the pharynx, in which there may be large glands in the neck with but a very small primary tumor tucked away in the nasopharynx.

REVIEW OF RHINOLARYNGOLOGIC CASES OF TRIPLE CANCER

In studying the descriptions of all thirty-seven reported instances of triple primary carcinoma of different organs, I found three instances which are of interest to the otolaryngologist.

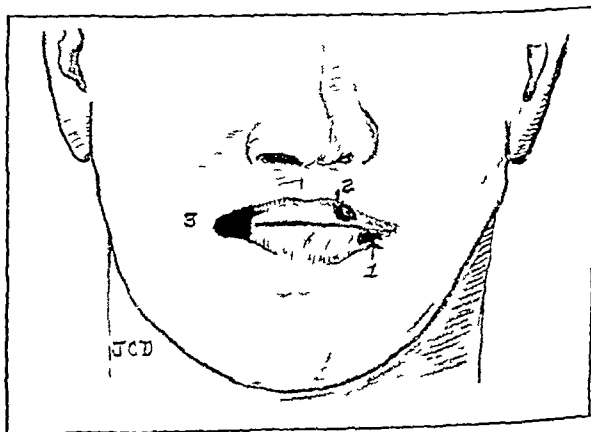


Fig. 1—Sketch of lesions in Nedopil's case.

The first case was that of Nedopil,⁵ an assistant in Billroth's clinic, who reported in 1877 a study which he called "Psoriasis of the Tongue and Buccal Mucosa and Its Relationship to Cancer." He reported fifteen cases in heavy smokers of cigars and cigars. This lesion was undoubtedly what would now be called leukoplakia.

One of the patients was a 52-year-old man who was a very heavy cigarette smoker. He had large white flecks on the buccal mucosa. There was no history of venereal infection. Two years later he had a carcinoma removed from the left lower lip followed by a plastic operation. Seven months later a mass the size of a hazelnut appeared on the mucosa of the upper lip which was excised a year later after unsuccessful therapy by the

⁵ Nedopil, N., Ueber die Psoriasis der Zungen und Mundschleimhaut und deren Verhältnisse zum Carcinom, *Arch. f. klin. Chir.* 20: 324-36, 1877.

chemical cautery, three years later the patient reentered the hospital because of a chronic ulceration 3 cm in diameter at the right angle of the mouth. This also was excised and one year later the patient had no symptoms of recurrence.

The second case was reported by Richter.⁶

A 62 year old man complained of dysphagia and vomiting for many months, the vomitus was sometimes blood streaked. The patient died fourteen days after his admission to the hospital and the autopsy demonstrated a large crater like ulceration at the base of the tongue extending down to the entrance of the larynx. The right half of the epiglottis also was eroded. On the right anterior wall of the esophagus behind the cricoid cartilage a white tumor mass measuring 2 by 4 cm penetrated the entire wall. In the esophagus below the tracheal bifurcation another tumor was found which was ulcerated and necrotic in the center. This led to a little cavity filled with foul smelling material situated between the esophagus and the right bronchus and communicating by a small opening with the right bronchus.

The wall of the esophagus between the upper and lower lesions was free from involvement.

The third case was reported by Hayward and Henderson.

The patient had three separate epitheliomas of the tongue. She was about 25 years of age and she had at first a large ulcer on the left side of the tongue adjacent to a sharp molar tooth. The ulcer developed into a deep cavern one half inch in diameter on the surface and 1 inch in depth from which she had severe arterial bleeding. Two days after the hemorrhage a deep ulcerated area developed on the opposite side of the tongue. About two weeks later another ulcer was noted at the tip of the tongue, which was believed to be malignant. Eventually the lesions from all these three points extended to a meeting point in the midline of the tongue. One

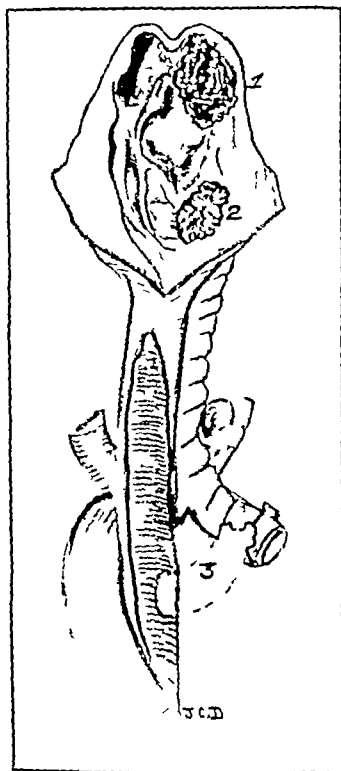


Fig 2—Sketch of lesions in Richter's case.

morning, eighteen months after the onset when the doctor was visiting the patient, she removed the anterior half of the tongue and presented it to him, the hemiglossectomy being caused by the coalescence of the lesions. About two months later the patient succumbed to cachexia and repeated hemorrhages.

REPORT OF CASE WITH SURVIVAL FROM TRIPLE PRIMARY CARCINOMA

The case presented fulfils all of Billroth's postulates.

The patient was a former Massachusetts Eye and Ear Infirmary attendant a widower, 62 years of age who had been a frequent visitor to the outpatient department of the Massachusetts General Hospital from 1923 to 1931 being treated there for hypertrophic arthritis and dental infection.

In September 1931 the patient complained of a small pimple on the right temporal region, which had become larger in a

period of nine months. Two areas were found on the right temporal region, one measuring 1 by 1 cm and the other measuring 0.5 by 0.5 cm. Both lesions disappeared with radium treatment administered in the dermatologic service. In May 1936 the patient noticed a recurrence of this lesion at the

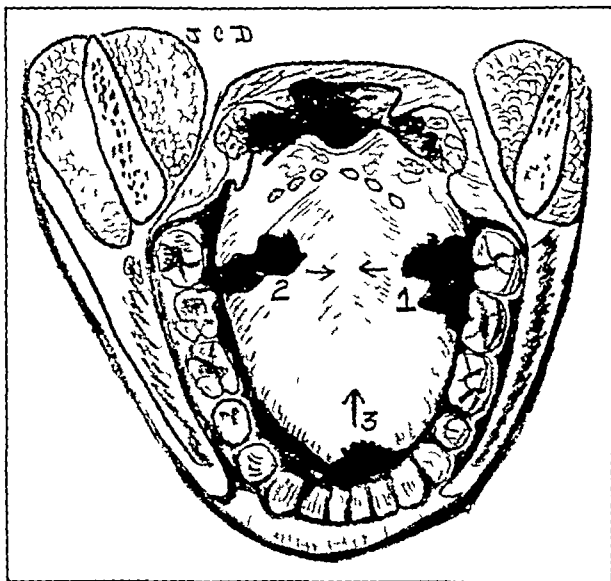


Fig 3—Sketch of lesions in Hayward and Henderson's case.

same site as previously noted, which was growing rapidly (fig 4). The section shows all the typical histologic characteristics of a basal cell carcinoma.

In January 1932, a few months after the first basal cell carcinoma was treated, he complained of being unable "to clear his throat" and by indirect laryngoscopy an ulcerated mass was seen involving the left arytenoid. A biopsy proved it to be epidermoid carcinoma grade 4 (fig 5). The Hinton blood test and examination of the chest were both negative.

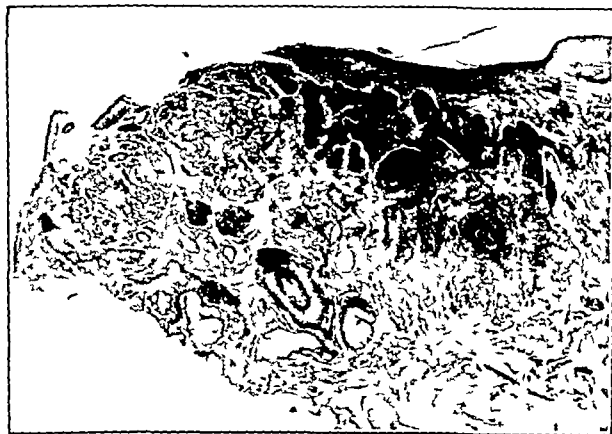


Fig 4—Basal cell carcinoma section under low power showing skin from the left temporal region. Note the deeply staining areas of basal cells just under the epithelial surface.

Feb 8 1932 a one stage total laryngectomy was done by Dr G H Poirier. A secondary closure of the neck wound was done twenty-four days later. The patient had a normal postoperative convalescence and worked as a parking stand attendant using an artificial larynx successfully.

Twenty-six months after the laryngectomy (April 7, 1934) the patient returned to the hospital complaining of pain about the tracheotomy opening. Microscopic examination of the granulations in the tracheal wound showed no evidence of tumor cells. However the patient had a large firm cervical node in the left side of the neck which was removed and found to be infiltrated

⁶ Richter, J. Zur Kasuistik der multiplen primären Karzinome. Wien klin Wchnschr 18 865 869 1905.

⁷ Hayward T E and Henderson R G. Multiple Epithelioma of the Tongue in a Woman Age 25 Years Resulting in Spontaneous Amputation of the Greater Part of the Organ. Lancet 2 22 23 1901.

with an epidermoid carcinoma grade 3 (fig 6). A block dissection of the neck was then done by Dr Poirier who removed all of the lymphatic, submaxillary and sublingual glands on the left side. This was followed by a course of high voltage roentgen therapy. It has now been approximately three and one-half years since the operation and there has been no evidence of recurrence in the throat or neck up to the present time.

Four years and three months after his original temporal basal cell cancer, Dec 28 1935, the patient presented himself again with an entirely different complaint, this time referable to his



Fig 5—Epidermoid carcinoma (grade 4) of the larynx section under high power showing very poor differentiation of epithelial cells. Note the many mitotic figures.

nose. He stated that he was having spontaneous intermittent attacks of epistaxis from his right naris for the previous seven weeks. This was associated with pain and right epiphora.

On examination a mass was seen obstructing the right naris in the region of the middle turbinate. A biopsy specimen from this area proved it to be an adenocarcinoma (fig 7). Surgical treatment was advised but the patient desired to temporize accepting roentgen therapy as a substitute. He was subjected to ten exposures of high voltage roentgen therapy with no improvement.



Fig 6—Epidermoid carcinoma section under low power showing a deeper staining tumor area within a left cervical gland.

The patient was admitted to the hospital nine months later Sept 23, 1936 because of headache, vomiting, severe pain in the right eye, increasing nasal obstruction and frequent attacks of epistaxis.

After the nose had been shrunk, a salmon colored mass was found to obstruct the whole right nostril and the septum pushed over to the left partially obstructing the left nostril.

The patient now consenting to surgical intervention was subjected to a modified right Moure operation performed by Dr LeRoy A Schall. A large soft mass was found filling the ethmoid labyrinth and was removed. The right nasal and

lacrimal bones were partially eroded. Four platinum needles containing 10 mg of radium were inserted in the operative defect for a period of 2,000 milligram hours. The microscopic examination of this tumor proved it to be adenocarcinoma (fig 8).

COMMENT

The case is presented as one in which it can be shown by microscopic proof that there occurred three separate and distinct primary carcinomas all situated above the thorax. The patient has survived all these three primary malignant tumors, one recurrence, and a grade 3 metastasis. He was seen May 20, 1937, and was found to be symptom free and showed no evidence of recurrence nine months since his last operation.

Nedopil's case of leukoplakia with subsequent carcinoma was proved at the postmortem examination. It cannot be dismissed without remarking that the development of three tumors in close lymphatic and anatomic relationship with one another may not simply be the extension of one primary neoplasm.

Richter's case also was diagnosed after death. Two tumors occurred at separate areas in the esophagus.



Fig 7—Adenocarcinoma section under low power showing the tumor from the right naris.

Here again it cannot be proved that the second tumor did not occur as a result of a metastasis or an extension through the lymphatics to a periesophageal lymphatic gland, which in turn repenetrated the esophagus and caused an esophageal-bronchial fistula.

Hayward and Henderson's case of multiple tumors of the tongue does not satisfy any of the precepts of Billroth. All three alleged tumors occurred in the same organ within a period of eighteen months and were clinically similar. The diagnosis of carcinoma was histologically proved in only one of the three tumors. Here again the primary tumor very likely extended to the two other areas by direct continuity or by implantation.

SUMMARY

The case from the Massachusetts Eye and Ear Infirmary shows three tumors in three separate regions, the lymphatic and venous drainage of these regions being in no way related to one another. The question of implantation by surgical manipulation is mentioned simply to exclude this possibility.

So far as I have been able to find, it is the only reported case in which surgical, roentgen and radium therapy of three separate and histologically different carcinomas occurring within the anatomic scope of the rhinolaryngologist has been survived.

CONCLUSIONS

1 Multiple primary neoplasms are rare, Warren and Gates quote it as occurring in 1.84 per cent of cancer cases

2 Triple primary neoplasms of miscellaneous organs comprise 2.9 per cent of all multiple cancer cases

3 Treatment of a patient afflicted with multiple primary neoplasms should be carried out as if they were single carcinomas



Fig 8—Adenocarcinoma section under high power showing tumor tissue removed from the right ethmoid. Note the many mitoses

4 In the case reported the requirements of Billroth concerning triple primary carcinoma are met. The patient has survived three primary carcinomas in areas of interest to the otolaryngologist

5 Three cases of triple primary malignancy have been reported which do not meet the requirements of Billroth's classification

243 Charles Street

ABSTRACT OF DISCUSSION

DR FRANK W. KONZELMANN, Philadelphia. The criteria that Dr Drooker has presented must be strictly observed in the diagnosis of multiple tumors. Any departure from such criteria is certain to lead to the inclusion of recurrent or metastatic single tumors in this rare and interesting group. Not so long ago at Temple University Hospital, there was a patient who had a tumor of the hard palate which proved on microscopic examination to be a squamous cell carcinoma. X-ray treatment was administered and after an interval all signs of tumor seemed to have disappeared. Months thereafter a second tumor appeared on the uvula. Histologically it was similar to the original lesion. Combined surgical and x-ray treatment removed the second neoplasm. Microscopic study of the mucous membrane removed over a wide area showed that the changes were widespread and that in all likelihood the second tumor was but a reappearance of the primary lesion. Microscopic study alone established the connection between the two. In another instance a patient presented a tumor mass in the groin. She gave a history of having had a lipoma removed from the neck, which was not studied histologically. A year previous to her admission to Temple University Hospital a second tumor, removed from the neck, was described microscopically as a neurinoma. The third neoplasm removed from the groin microscopically proved to be a melanotic melanoma. One cannot accept these as examples of three separate primary tumors without an opportunity of comparing the histologic structure. I believe this case demonstrates the wisdom of microscopic study of all neoplasms removed, regardless of their benign nature clinically. One can never know whether the original gross diagnosis of the first tumor, namely, lipoma, was correct. A case reported recently in THE JOURNAL in which there were a carcinoma of the left breast, a rhabdomyosarcoma of the left thigh and neurofibroma of the

skin of the neck cannot be questioned as an instance of multiple primary tumors. I agree with Dr Drooker that microscopic study is essential and that the criteria mentioned in his article must be strictly observed. It is equally important that each lesion should be treated as a separate neoplasm, for, as Dr Drooker has pointed out, some respond best to irradiation and some to surgical removal.

DR LOUIS H. CLERF, Philadelphia. Multiple primary neoplasms have not been common in my experience. I observed two cases at the Bronchoscopic Clinic, Jefferson Hospital in each of which there were two tumors which arose from different sites. One of these in a woman aged 53, was referred for investigation of a tumor of the left vocal cord. I found a squamous carcinoma of the larynx, grade 2. A satisfactory result was secured by thyrofixure. The patient was referred back about one year later because of the occurrence of an enlarged lymph node in the left supraclavicular space. It was assumed that this was a metastatic lesion from the larynx. There was no evidence of recurrence in the larynx itself, and no metastasis was observed in the regional lymph nodes. Further investigation revealed a growth in the left mammary gland with extensive axillary metastasis. The patient was referred to the late Dr E. J. Klopp, who made a diagnosis of carcinoma of the breast and considered the case inoperable. Radiation therapy was given and later the patient died from the carcinoma of the breast. In this case there was little doubt concerning the independence of the two tumors. Within the past two weeks another case of carcinoma of the larynx was referred for operation. This too presented a relatively early lesion, which was considered suitable for thyrofixure. A biopsy was done and a diagnosis of papillary squamous carcinoma was made. The patient gave a history of weight loss of about 30 pounds



Fig 9—Patient who survived three primary carcinomas, a recurrence and a metastasis (May 20, 1937)

(136 Kg.) and indigestion for over a year. X-ray and gastroscopic studies revealed a carcinoma of the stomach. Exploratory laparotomy was done and an adenocarcinoma with extensive metastasis was found involving the pyloric end of the stomach. Here again was a case of two independently located lesions, each of different histologic structure. At the Radiologic Clinic, Philadelphia General Hospital, I observed two interesting cases of multiple cancer. A man had a squamous carcinoma involving the skin of the nose and later a squamous carcinoma involving the floor of the mouth developed. It is hardly prob-

able that either of these could have been considered as a metastasis. The other case unfortunately was not completely studied from the standpoint of microscopic examination of tissue. Three lesions apparently independent of one another developed in a man within a period of ten years. In 1926 a prickle cell carcinoma of the left auricle was removed by amputation of this structure. In 1930 a lesion of the face developed which was believed to be a skin cancer but cleared up under x-ray treatment. Unfortunately, no biopsy was made on the face lesion. Its appearances were suggestive of carcinoma. In 1936 a lesion developed involving the right auricle. This proved to be squamous carcinoma.

DR HARRIS P MOSHER, Boston. In reviewing the pathologic reports at the Mosher Laboratory for the past seven years, I have not found any cases of multiple malignancy other than the one presented. It is likely that because of the limited study to a small portion of the body, multiple primary tumors are not seen more frequently. My belief is that a second or even a third primary malignant tumor occurring in one person is simply a coincidence. The involved unknown factors that are present in the etiology of cancer may manifest themselves in different organs. With our present limitations as to the knowledge of the genesis of multiple primary tumors, I think that they should be treated as in the case reported, as if the three cancers occurred in three separate persons. The case report brings up an interesting point in the treatment of cancer of the larynx. It is generally believed that a grade 4 epidermoid carcinoma of the larynx should not be treated surgically but preferably by x-rays. Metastatic glands developed on the left side of the neck two years after the removal of a grade 4 carcinoma of the larynx. Since their removal, this patient, apparently one with a carcinomatous constitution, has had a three year arrest from both grade 3 and grade 4 cancer of the neck.

VESICAL DYSFUNCTION FOLLOWING ABDOMINOPERINEAL RESECTION

FOR CARCINOMA OF THE RECTUM

MALCOLM R. HILL, M.D.

ROGER W. BARNES, M.D.

AND

CYRIL B. COURVILLE, M.D.

LOS ANGELES

As a result of experience with a number of cases of abdominoperineal resection for carcinoma of the rectum, it became apparent to one of us (M. R. H.) that vesical dysfunction occurred too often after operation to be considered as an incidental complication. Its frequency suggested that it would be given serious consideration in the literature. When this was found not to be the case, an earnest attempt to study the problem seemed to us to be very much worth while.

Since a complete investigation of the problem required the cooperation of the departments of proctology, urology and neurology, this paper is the result of studies conducted along several lines. It is our purpose to give a short survey of our own experiences as exemplified by typical cases, to review the experiences of contemporary surgeons and to investigate the possible cause of the urinary disturbances.

Our conclusions are based on an investigation of urinary symptoms in a series of twenty-two cases which have recently come under our observation and on a series of anatomic dissections of the nerve supply of the bladder. The value of this study is considerably

enhanced because contemporary surgeons have in response to a questionnaire recently sent them, reported to us the incidence and nature of vesical disturbances in their cases.

CASE 1—Rectal bleeding and progressive constipation in an adult male. Diagnosis of carcinoma of the rectum. One stage abdominoperineal resection one year later. Transitory urinary retention following operation.

D. F., a landlord aged 62, who complained of rectal bleeding and progressive constipation for eighteen months was referred by Dr. Roy Cummings, he was first examined April 22, 1936. An annular carcinoma of the rectum with moderate fixation in the pelvis was found one fingerlength above the anus. The condition had been diagnosed one year previously, but the patient had sought relief meanwhile in Christian science. A preoperative cystoscopic study revealed mild inflammation of the bladder neck with slight median bar formation. There was no edema of the bladder mucosa. A preoperative cystogram was normal.

A one stage combined abdominoperineal resection was done April 28. A rather large annular malignant growth was found well below the peritoneal reflection. In spite of difficult dissection due to a fairly long, narrow pelvis and to the patient's obesity, it was believed that the nerve supply of the bladder was not traumatized.

Urinary retention was noticed immediately after the operation and was controlled by a retention catheter. A cystogram made six days after the operation showed a marked dome shaped fundus with slightly more bulging on the right side. A cystogram made twelve days postoperatively showed the contour of the bladder to be more normal but a slight cone shaped deformity of the fundus was in evidence.

A cystometric study was done twenty-seven days after the operation, and it showed an atonic bladder with the first desire to void apparent after 450 cc of solution had been injected producing an intravesical pressure of 12 mm of mercury. The capacity of the bladder was 550 cc with an intravesical pressure of 42 mm. The patient had a varying amount of vesical dysfunction for several weeks after which time normal micturition was resumed.

This patient evidently sustained a minor and recoverable degree of trauma to the parasympathetic fibers to the bladder. This was shown by the atonicity of the bladder musculature, as demonstrated by cystograms and cystometric study. Furthermore, the injury was greater on one side than on the other, as indicated by the greater prominence of the dome of the bladder as shown in the cystogram. It is anticipated that normal vesical function will be completely restored in this case.

CASE 2—Symptoms suggestive of chronic appendicitis in a 42 year old woman. Abdominal exploration for acute intestinal obstruction. Carcinoma of the rectosigmoid associated with polyposis of the entire colon. Subsequent one stage abdominoperineal resection. Immediate urinary retention with rapid recovery but persistent atonicity of the bladder.

O. B., a housewife aged 42, referred by Dr. Glenn Curtis had for many months complained of symptoms suggesting chronic appendicitis. Because of an acute intestinal obstruction an abdominal exploration was done. An obstructive lesion was found in the sigmoid part of the colon. The large bowel was considerably distended. A palliative simple colostomy was done. The patient was seen in consultation on the eighth postoperative day. At this time a napkin ring type of adenocarcinoma was observed to involve the rectosigmoid junction and to be associated with polyposis of the entire colon. A combined abdominoperineal resection was done without difficulty eight weeks later. A normal preoperative cystogram showed considerable depression of the fundus due to pressure by the uterus.

Urinary retention persisted for five days after resection. It was controlled by interval catheterization. A small amount of residual urine persisted for several weeks. A cystogram made two weeks after the operation showed the uterine depre-

sion in the fundus of the bladder to be entirely absent. In its place a somewhat cone-shaped outline was observed and numerous cellulæ and small diverticula, more marked on the left side, were demonstrated. A cystogram made six weeks after operation showed the greatest diameter of the bladder to be transverse, assuming a normal contour. A certain amount of trabeculation was shown to have persisted on the left side.

A cystometric study four months after the operation disclosed a very atonic bladder, a desire to void at a volume of 250 cc and a pressure of 12 mm of mercury, a total capacity of 450 cc and no increase in intravesical pressure above 12 mm.

There was evidently a rather severe injury to the parasympathetic elements at the time of operation as shown by the marked change in the contour of the bladder. An interesting observation is the formation of cellulæ and diverticula within so short a period after operation (two weeks). Ordinarily these alterations occur only after months or even years of urinary retention due to paralysis or obstruction. Marked atonicity of the bladder still persists as shown by cystometric studies. While some difficulty in voiding and slow stream still persist after four months it is likely that normal function will ultimately be restored.

CASE 3—Colostomy followed by radiation therapy for presumed carcinoma of the rectum. Low grade adenocarcinoma disclosed by subsequent biopsy. Combined abdominoperineal resection. Growth adherent to vaginal wall. Immediate complete urinary retention with partial recovery in two months.

C C, a woman aged 40, was referred by Dr C O Bailey, a radiologist, who had given her radium therapy for carcinoma of the rectum. A colostomy had been performed in August 1936 by an osteopathic surgeon after a diagnosis of carcinoma of the rectum, with much hesitation and delay. Examination Feb 18, 1937, disclosed a long tubular stricture extending from midrectum well up into the pelvis. A biopsy disclosed an adenocarcinoma, grade 1. To rule out lymphopathia venereum a Frei test was done, the results were negative. A preoperative cystogram proved to be normal showing no uterine depression in the fundus.

A combined abdominoperineal resection was done April 2, 1937. The malfunctioning palliative artificial anus was removed and a colostomy was done, a permanent opening being placed in the midline at the level of the umbilicus. A malignant growth was present in the form of a tubular stricture extending from midrectum well up into the sigmoid loop above the peritoneal reflection. There was definite fixation to the posterior vaginal wall, which had to be resected.

Complete urinary retention occurred immediately after operation. It was controlled first by retention catheter and subsequently by interval catheterization. A cystogram made two weeks after operation showed a dome-shaped deformity on the left side of the bladder, the right side being quite flat and approximately normal in appearance. A cystogram made four weeks after operation showed the dome-shaped deformity to be less marked. At a cystoscopic examination four weeks after operation, 100 cc of residual urine was found. The bladder mucosa was inflamed. The tone of the bladder musculature was considerably decreased, suprapubic pressure being necessary to empty the bladder through the cystoscope.

A cystometric study made seven weeks after operation showed a fairly rapid early rise in intravesical pressure with a desire to void when the volume was 200 cc and the pressure 40 mm of mercury. The capacity of the bladder was 500 cc, with a pressure of 70 mm.

In this case the cystograms suggested a predominantly unilateral injury to the parasympathetic elements. This injury was not severe, but its effects have persisted for two months. The intravesical pressure, as determined by cystometric studies, was undoubtedly increased by the inflammation of the bladder mucosa. This was

shown by the rapid rise in intravesical pressure. Although the vesical symptoms have persisted for two months a definite degree of recovery has already taken place, and complete restoration is hoped for.

EXPERIENCES OF CONTEMPORARY SURGEONS

A questionnaire was sent out to approximately 170 contemporary proctologists and general surgeons and seventy-one responded. For various reasons twelve of these did not fill out answers to questions submitted. The remaining fifty-nine filled out the blank as requested.

As to types of urinary complications encountered thirty-seven reported complete early retention, twenty-five partial early retention, thirteen partial early incontinence and four complete early incontinence. One reported partial late retention (after six months). Late incontinence (after six months) was mentioned as being complete by four and partial by twelve. Four of those mentioning late incontinence stipulated that in the cases they had observed it was nocturnal.



Fig 1—Dome shaped deformity of bladder following resection of the rectum for carcinoma. A transurethral prostatic resection was done after the resection accounting for the subvesical outpocketing.

Only twelve surgeons reported cystoscopic study in their cases. The conditions observed included diffuse cystitis with trabeculations, cystitis, trigonitis, pyelitis, prolapse, stricture, obstruction by connective tissue of the posterior part of the urethra and prostatic hypertrophy. One surgeon and author of repute reported that cystoscopy gave negative results in cases of incontinence. An American of wide experience in this field of surgery reported that in the many cases in which cystoscopy had been performed conditions were observed quite characteristic of true neurogenic disease of the bladder of the type seen with *tabes dorsalis* and other lesions which interfere with the nerve supply of the bladder.

The estimated percentage of vesical dysfunction following rectal resection observed by the fifty-nine surgeons varied from zero to 100. Thirty-two reported 50 per cent and over. Twenty reported that two thirds or more of their patients had urinary disturbances after resection. Nineteen reported an incidence of under 25 per cent. Seven reported 100 per cent vesical dysfunction in their series of cases. Seven declined to state

what their estimate would be. Four reported that they had no urinary complications.

The estimated time in which distressing urinary symptoms persist varies from a few days to three months. Twenty-eight reported symptoms present for one month or less. Seventeen declined to give their estimate. Ten reported an average of over one month in which symptoms of vesical dysfunction were present.



Fig 2—Diverticula of the bladder wall after rectal resection

Nine reported that symptoms were present for less than one week. Mention was made of cases in which symptoms persisted from twelve to eighteen months or more. In one case of nocturnal incontinence a penile clamp was necessary to control leakage.

One surgeon expressed the opinion that more injuries to nerve structures result in vesical dysfunction than commonly believed and that some patients never fully recover. The cause of vesical disturbance in cases of rectal resection was given as injury to sympathetic nerves by thirty-seven observers, reflex action by twelve, cystitis or inflammation by seven, trauma by five, lack of support following surgery by four, shock by one, interference with ureters by one, pressure from packing by one and contraction and scarring by one. One surgeon said that the fact that the nerve center for both bladder and rectum are in the same level in the spinal cord accounts for the urinary symptoms.

The technic recommended to obviate occurrence of vesical dysfunction following resection largely consisted of drainage of the bladder by indwelling catheter or repeated catheterizations. Irrigations with solutions of boric acid, potassium permanganate, silver nitrate and sodium chloride were mentioned. Instillations of mild protein silver, solution of silver nitrate, mercurochrome and solution of boric acid were also used. Diuretics and antiseptics by mouth were advocated by some. Mandelic acid was specifically mentioned. Support of the base of bladder, forcing the fluids and resection of the prostatic bar were considered as preventive measures. A number of surgeons mentioned one important precaution, which, as we shall show, is of paramount importance, i. e., staying close to the rectal wall in the course of resection, thus avoiding the nerves and hypogastric plexuses. On the other hand, some surgeons stipulated that it is necessary to disregard entirely the

nervous structures in dissecting out the regional connective tissue and lymph glands in order to prevent regional metastasis and recurrence. Spinal anesthesia is recommended as a means of obviating nerve disturbance.

TYPES AND MECHANISM OF VESICAL DYSFUNCTION FOLLOWING RESECTION OF THE RECTUM

A very interesting phenomenon is observed in serial cystograms taken in cases of rectal resection for carcinoma. Preoperatively the contour of the bladder has been found to be normal while postoperatively the picture proves to be radically changed. The bladder is passively distended, owing to atony of its musculature. This is indicated by the necessity of suprapubic pressure to empty the bladder when the catheter is in place and by cystometric studies. The fundus of the bladder becomes dome shaped (fig 1) and may present an irregular outline due to the occurrence of numerous cellules or even diverticula (fig 2). It has been generally believed that it requires months or even years of urinary stasis, either obstructive or paralytic, to produce these outpocketings of the bladder wall. On the contrary, we find these irregularities within two weeks after resection of the rectum. In some instances one half of the bladder shows them while the other half presents a normal, or nearly normal, contour (fig 3). This unilateral involvement is indicative of greater injury to the nerves on this side than on the other.

The bladder is supplied with sympathetic fibers from the four lumbar sympathetic ganglions by way of the presacral nerves and with parasympathetic fibers from the second, third and fourth sacral nerves by way of the pelvic nerves. These fibers form by their union dense networks of nervous tissue the hypogastric

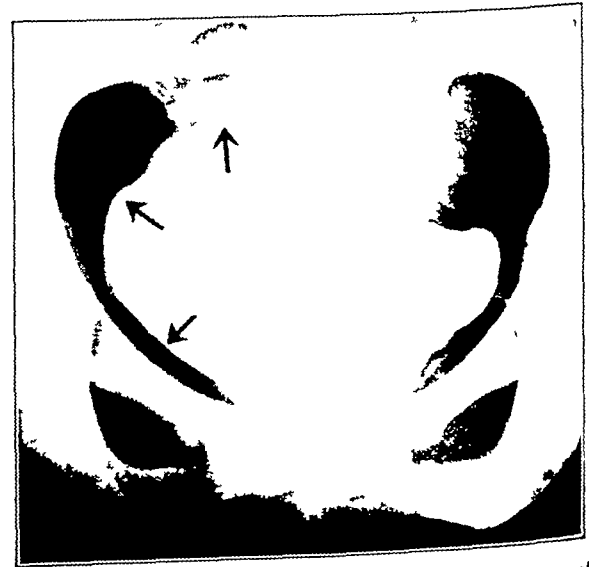


Fig 3—Unilateral paralysis of the bladder probably due to injury of the parasympathetic fibers in the hypogastric plexus on the affected side

plexuses, which lie one on each side of the rectum just where it passes through the pelvic floor. From these plexuses, the nerve fibers are projected anteriorly into the walls of the bladder. Each lateral half of the bladder is supplied by nerve fibers from the hypogastric plexus on its own side (fig 4).

The sympathetic fibers have for their function the closure of the internal sphincter and inhibition of muscular elements of the bladder wall. The parasympa

thetic fibers, on the other hand produce contraction of the bladder musculature and relaxation of the internal sphincter, reacting reciprocally with the sympathetic elements. The external sphincter, under voluntary control, is supplied by the pudic nerves.

The picture presented by cystograms the results of cystometric studies and the patient's symptoms suggests an injury to parasympathetic nerves as the cause of vesical dysfunction following radical resection of the rectum. The location of the sympathetic fibers, somewhat distant from the rectum as they pass over the sacral promontory, seems to exclude them from operative injury. The parasympathetic fibers are probably traumatized near the rectum as it leaves the pelvis. These relationships are clearly seen in dissections of the human pelvis.

The nature and extent of injury to the parasympathetic elements varies considerably, judging from the observations in our series of cases. The injury may be minor and transitory. Incomplete injury may also be fairly extensive. In either case there has probably been stretching of the nerves, with temporary loss of function. While dysfunction may be marked prompt and complete recovery from the resultant symptom may be expected. On the other hand, if any number of nerve fibers have actually been sectioned a more persistent or even a permanent urinary disorder may result. The degree of residual dysfunction is probably indicative of the degree of injury to nervous structures, other possible causes for the disorder having been excluded.

The location and stage of growth of the carcinoma also has much to do with the extent of urinary dysfunction, since the extent of necessary dissection is predicated by these factors. The primary growth may be anal, rectal or rectosigmoid. In any case the characteristics of the local lymphatic drainage demand adequate and often radical resection with increased danger to the nervous elements. Furthermore, the extent of the growth, the degree of fixation in the pelvis, the amount of secondary inflammation and the extent of involvement of the regional lymph glands all influence the extent of resection and the danger of trauma to local nerves. It is clearly evident that the close relationship of the nervous elements to the lower part of the rectum makes injury an easy matter during resection. Yet when the pelvic viscera and supporting structures are carefully separated along their line of cleavage from the anorectal canal, a minimum of vesical disturbance need be expected.

TREATMENT OF VESICAL COMPLICATIONS

Catheterization is usually necessary when retention occurs after resection of the rectum. A varying degree of cystitis almost invariably develops. This condition is usually worse in cases in which catheterization has been neglected. In most instances the treatment of choice is an indwelling urethral catheter and daily lavages of the bladder with warm boric acid solution. For women a 16 or 18 F wing tip catheter is commonly used, while for men a double-eyed Robinson soft rubber catheter of the same size is preferable. The catheter is removed at least once a week, left out for eight hours, then reinserted immediately after the patient voids, the amount of residual urine being determined in this way. If this amount is more than 100 cc, the catheter is once more fixed in place. If residual urine is still present after the patient is allowed to be up, it is preferable to catheterize two or three times daily. When

the urine is purulent, lavage of the bladder with 1 to 6,000 solution of potassium permanganate followed by instillation of 15 cc of 1 to 1,000 silver nitrate solution is continued until the residual urine is less than 25 cc. It has been found that if an indwelling catheter is not used or frequent catheterization is not carried out as described, severe cystitis and, at times infection of the upper part of the urinary tract will develop.

SUMMARY AND CONCLUSIONS

1 Retention of urine with distention of the bladder as shown on the cystogram is a fairly common complication of resection of the rectum for carcinoma. Cellules or small diverticula, ordinarily the result of long continued obstructive or paralytic distention, may appear within two weeks.

2 Urinary retention may be transitory, may be present for days, weeks or even months or, occasionally,



Fig. 4—Dissection showing relationship of the hypogastric plexus to the rectum.

may be permanent. The extent and duration of vesical dysfunction depends on the character and extent of damage to the nervous elements.

3 The consequent paralytic atony of the bladder may affect one or both sides, depending on whether the nerves on one or both sides are injured.

4 The character of the urinary disturbance indicates that the parasympathetic elements are exclusively or predominantly affected. This suggests that the pelvic nerves themselves or the parasympathetic elements in the hypogastric plexuses are the seat of injury.

5 Anatomic dissections make clear the intimate relationship between the pelvic nerves and hypogastric plexuses and the lower part of the rectum where it penetrates the pelvic floor.

6 Injuries to these nervous elements are more apt to take place when the growth involves the upper part of the rectum or the lower part of the sigmoid flexure and when there is widespread involvement of the regional lymph nodes, with fixation to other organs or tissues.

7 Treatment of retention by an indwelling catheter is indicated as long as there is more than 50 cc of retained urine. If cystitis develops, which is most apt to occur in patients not catheterized, it should be appropriately treated with lavage of the bladder with potassium permanganate solution (1:6,000) and instillation of silver nitrate solution (1:1,000, 15 cc.)

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ABSTRACT OF DISCUSSION

DR DUDLEY A. SMITH, San Francisco. In my series of 163 abdominoperineal resections for cancer of the rectum, a large percentage possibly 90, have shown some vesical dysfunction following this operation. Fortunately, for the most part the dysfunction has been transient lasting from one week to four weeks, and of a mild degree. In three of these cases there was serious dysfunction. One man had two years of catheter life until his death from another cause. In one woman there was dysfunction for about six months, which cleared up entirely. A third patient a man on whom I operated five years ago, has from that time had nocturnal incontinence, for which condition it has been necessary to use a penile clamp. I wish to thank the authors for their very careful study of this condition. It is a condition which has not been studied sufficiently heretofore. I believe that as a result of their work it will be possible to avoid much of the vesical trouble that follows this operation. It is clear from their investigation that the length of time vesical dysfunction lasts and its severity depend on the amount of injury to the nerve fibers.

DR DESCUM C. MCKENNEY, Buffalo. In a small series I found that two thirds of the patients were males and all required interval or indwelling catheterization. Of the other third, females, 40 per cent were able to void and 60 per cent required catheterization. The average length of time catheterization was required was six days. Retention of urine occurs in pneumonia with pleurisy, severe colitis, anal fissure, perianal and perirectal abscesses, thrombosed and infected hemorrhoids, and many other conditions. It occurs after many operative procedures, especially abdominal, such as herniotomy, appendectomy or hysterectomy. It may follow a curettage or an abdominal incision. It is quite evident that there is no direct injury to the sympathetics and parasympathetics in these cases. It would be interesting to compare the amount of vesical dysfunction in these cases with a similar number of cases of abdominoperineal resections. When a patient has much postoperative pain, he refrains from straining to void for fear of increasing it. On the other hand, when there is practically no pain following an operation the same thing may occur. The discomfort of trying to void in the recumbent position adds to the difficulty. Watchful postoperative care is necessary to make sure that when a patient voids following operation there is left as suggested not more than 50 cc of residual urine. It is advisable to catheterize as soon as the patient is unable to void and the bladder distends as a distended bladder has little power to contract. Eight hour or indwelling catheterization is undoubtedly less dangerous than retention. When catheterization is necessary, the oral administration of methenamine and acid sodium phosphate seems to decrease the incidence of cystitis. Some urologists believe that there is also considerable virtue in the administration of two tablets of sulfanilamide after each meal. The passage of very little urine in the first twenty-four or forty-eight hours after operation may be due to diminished secretion the result of operative shock, and it is better not to catheterize then if one can be sure of one's ground, as every catheterization adds to the danger of infection.

DR EDWARD G. MARTIN, Detroit. After a posterior resection, a man with no prior bladder difficulty had persistent necessity for catheterization, this condition continued for more than a year. Indwelling catheters and various other methods for relief were tried. After a year he had a suprapubic drainage and suprapubic prostatectomy. His symptoms were very soon relieved, and for the past year he has continued well. The prostate must be excluded as a complication in retention.

THE ROENTGEN ASPECT OF SYMPATHETIC NEUROBLASTOMA

HOWARD P. DOUB, M.D.

DETROIT

While sympathetic neuroblastomas were first described by Maichand, in 1891, as being derived from neural structures, it was not until 1910 that they were established as a separate and distinct clinical entity by the histologic observations of Wright.¹ Since that time many cases have been reported and much information has accumulated regarding their clinical picture and prognosis.

They are neurogenic in origin and are sometimes referred to as neuroblastomas or sympathoblastomas. Two disease syndromes have been described. The first, described by Pepper,² emphasized the adrenal origin, with early metastases in the liver and the early age at which the tumor appears. The second type, which was described by Hutchinson,³ occurred somewhat later. There were metastatic lesions in the skull orbits and long bones. A moderate degree of anemia was present.

Later studies have shown not only that these two types overlap but that they are indistinguishable pathologically and roentgenologically. As the tumors arise from undifferentiated cells of the sympathetic nervous system, their origin is not confined to adrenal tissue. They may also arise in the sympathetic ganglions along the spine, especially in the cervical area.

These tumors are seen most commonly in children under the age of 4 years but may also occur in adults and are said to be more common in males. They are in all probability congenital.

The initial symptom in my three cases was pain referred to the spine and the legs. In most reported cases the common complaint was an abdominal mass although in some instances the metastatic lesions attract the first attention. Loss of weight is usually present, and there may be vomiting. The child when first seen is frequently pale, undernourished and irritable. An abdominal mass may be the most prominent observation, while in some cases swelling about the face or skull is noted. Proptosis of one or both eyes with discoloration of the lids is common. Liefelder⁴ stated that the ocular signs are caused by increased intracranial pressure and metastases to the orbit. Choked disk was present in all his cases. Enlarged glands occur early or late. Bone pain, from metastases, may be the predominating feature at this time.

The clinical course is usually characterized by a rapid decline followed by death in a few months. There may be manifestations of temporary improvement following radiotherapy, but relapse soon occurs, and the downward course is resumed. The local tumors frequently appear to respond to radiotherapy, but this has no apparent effect on the development of distant metastases.

From the Department of Roentgenology, Henry Ford Hospital, Read before the Section on Radiology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1935.

- 1 Wright J. H. Neurocytoma or Neuroblastoma. A Kind of Tumor Generally Recognized. *J. Exper. Med.* 12: 556, 1910.
- 2 Pepper W. A. Study of Congenital Sarcoma of the Liver and Suprarenal. *Am. J. M. Sc.* 121: 287, 1901.
- 3 Hutchinson R. Suprarenal Sarcoma in Children with Metastases in the Skull. *Quart. J. Med.* 1: 33, 1907.
- 4 Liefelder P. J. Ocular Complications in Neuroblastoma. *Am. J. Ophth.* 18: 938 (Oct.) 1935.

The roentgenographic changes are among the most interesting observations in this disease. The most constant changes are those associated with bone metastases. The changes in the skull consist of widening of the sutures and increased digital markings indicative of increased intracranial pressure. In addition there is evidence of involvement of the bones of the skull manifested by minute foci of resorption, which produces a finely granular type of osteoporosis. The flat bones of the pelvis show a type of infiltration similar to that in the skull. This type of bone involvement appears to be the characteristic lesion in the flat bones.

In the long bones various types of lesions are seen. Elevation of the periosteum is frequently present and may be local or may extend along the entire length of the shaft. Areas of metastatic involvement with bone resorption are seen in any of the long bones. These changes are more apt to be in the ends of the diaphyses, adjacent to the epiphyseal lines. In my cases the resorption in the upper ends of the humeri was the greatest along the medial border of the metaphysis. In advanced cases these changes may extend also the full length of the shaft of the bone. In many instances the resorption is of uneven density, suggesting a diffuse infiltration rather than a massive destruction, such as is seen in certain cases of osteoclastic carcinoma. Askin and

responding to the palpable mass. In exceptional instances the primary tumor may be seen overlying the upper part of the chest, as in a case reported by Hartung and Rubert.⁶

The tumor mass when removed is usually seen to be an encapsulated solid tumor. Askin and Geschickter⁵ found that the kidney was usually compressed rather than invaded. The adrenal was sometimes entirely displaced by the tumor mass. They found that metastasis to the retroperitoneal lymph nodes was more common than metastasis to the bones or liver.

Histologically, these tumors are quite cellular and are composed of small cells with hyperchromatic nuclei and a narrow rim of cytoplasm. The formation of rosettes by the cells is said to be one of the characteristic microscopic observations, but Askin and Geschickter⁵ saw it in only one third of their seventeen cases. These rosettes are characterized by a circular arrangement of cells about bundles of fibrillae. The characteristic cell is similar to the primitive migrating cells of the sympathetic nervous system.

High voltage roentgen therapy was administered in two of my cases and radium packs in the third. In two of the cases there was marked regression of the local growths but owing to the extensive metastases the relief was only temporary. The tumors were moderately radiosensitive. The clinical course was rapidly downward, with only temporary remission after radiotherapy. The average length of life from the time of my first observation until death was four and one-third months.

REPORTS OF CASES

CASE 1—History—D. M., a white boy aged 2½ years, was admitted April 6, 1935, for pain in the back, left hip and thigh. The family history was irrelevant. The child had always been well up to the time of the present illness.

Four weeks previous to admission he fell from a tricycle, and this fall was followed by slight disability for a few days. He was then well until a few days before admission. Pain had been present in the back and the left leg for several days. He was quite irritable.

Examination—The child was well developed, well nourished and not acutely ill. The upper part of the respiratory tract was normal. The chest and the abdomen were normal. He walked with a left-sided limp and held the leg flexed and in external rotation. There was no limitation of motion of the left hip. The left knee kick was not obtained. The lower dorsal and lumbar portions of the spine were flexed and could not be straightened out. At this time x-ray examination of the spine revealed no evidence of pathologic changes in bones or joints.

After conservative treatment for several weeks with the child on a Bradford frame a palpable mass appeared in the left lumbar area. Lumbar punctures gave no additional information. At this time x-ray examination was made of the spine, pelvis and long bones. It disclosed evidence of a finely granular type of osteoporosis in the pelvis, femurs and ribs. The humeri

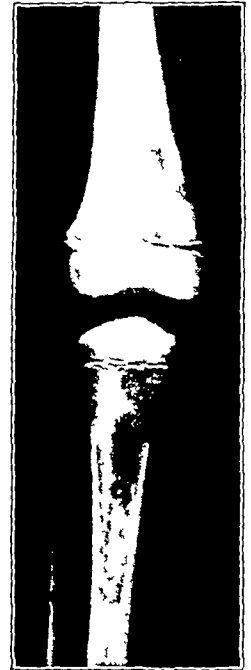


Fig 2 (case 1)—Granular type of osteoporosis with localized areas of more intense bone infiltration.



Fig 1 (case 1)—Granular type of osteoporosis in the pelvis and femur.

Geschickter⁵ described these metaphyseal lesions as wedge shaped. I have been impressed by the osteoporosis of an extreme grade involving the metaphyses in certain cases before actual dissolution of the bone structure takes place.

In cases in which there are large abdominal masses, a diffuse shadow may be seen on the affected side cor-

⁵ Askin J. A. and Geschickter C. F. Neuroblastoma of the Adrenal in Children. *J. Pediat.* 7: 157 (Aug.) 1935.

⁶ Hartung Adolph and Rubert S. R. Roentgen Aspects of Sympathetic Neuroblastoma. *Radiology* 24: 607 (May) 1935.

and the spine were normal. Extensive osteoporosis was present in the diaphyses of the femurs.

A blood count showed 3,700,000 red cells and 12,100 white cells. A spinal fluid culture was negative. The Wassermann reaction was negative. An exploratory laparotomy was carried out, and a retroperitoneal tumor about 4 by 2 inches (10 by 5 cm) was found overlying the spine. A piece was removed for microscopic study.

The pathologic diagnosis was sympathetic neuroblastoma with metastatic lymph nodes.

Röntgen Therapy—High voltage roentgen therapy was administered over the abdomen, pelvis, femurs and knees. The following factors were used: 190 kilovolts, 50 cm focal skin distance, 0.5 mm copper and 1 mm aluminum filtration. From 600 to 800 roentgens was applied in fractional doses. Afterward the child improved clinically, and the tumor in the abdomen regressed until it was scarcely palpable, but the use of the legs did not improve. After several months, enlarged glands appeared in both sides of the neck and in both groins. The appetite became poor, irritability increased, and he declined rapidly. Death occurred Sept. 11, 1935.

Postmortem Examination—There was a large mass of retroperitoneal nodes. These were adjacent and attached to the left adrenal. They extended from the lumbar region to the mediastinum. A few nodules were observed in the liver and in the root of the lung. Areas of tumor tissue were present in the lumbar vertebrae.

Sections of the tumor tissue showed it to be composed of irregularly shaped islands of cells separated by fibrillar stroma. The cell nuclei were round, ovoid or polyhedral and were hyperchromatic. The cytoplasm was indistinct. In some sections, there was a tendency toward rosette arrangement of the cells.

Summary Sympathetic neuroblastoma with metastases to lymph nodes, liver, lungs and lumbar vertebrae.

CASE 2—History—H. N., a white girl aged 4½ years, was admitted Aug. 24, 1934, for pain in the epigastrium and over the upper part of the thighs. The family history was irrelevant. No history of the usual childhood diseases was elicited.

During April 1934 the patient complained of pain in the upper part of the thighs. Shortly afterward she displayed a marked loss of appetite, which recently had become very poor. She played little after the onset of her illness. Some loss of weight



Fig. 3 (case 2)—Increased intracranial pressure with infiltration of the bones of the skull and face.

was noted. An abdominal mass was noted in May 1934 by a physician who administered roentgen therapy over it (dosage factors not known).

Examination—The child was pale and undernourished, with a large abdominal mass presenting a firm nodular outline chiefly in the midabdomen above the umbilicus. There was generalized glandular enlargement. Marked facial palsy was observed on the left. The tongue was protruded in the midline. The left pupil was larger than the right but both reacted to light and in accommodation. A localized edematous swelling was present in the midfrontal area to which two veins con-

verged and became quite prominent when the child cried. There was impaired resonance over both axillae. The examination otherwise gave negative results.

The Wassermann reaction was negative. A blood count showed red cells 1,610,000 and white cells 4,350 with polymorphonuclears 82 per cent, small mononuclears 17 per cent and hemoglobin 6 Gm per hundred cubic centimeters. Biopsy of an inguinal gland suggested lymphoblastoma.

The bones of the skull and face showed a finely granular type of osteoporosis suggesting infiltration of an unusual type.

There was evidence of increased intracranial pressure with widening of the coronal suture. In the chest there was evidence of pleurisy, with an effusion on the right side. The flat bones of the pelvis showed evidence of an infiltrative process similar to the changes in the skull. The long bones were the seat of an erosive process, which was noted especially along the medial borders of the diaphyses and was more prominent at the proximal ends. There was also evidence of infiltration, with beginning decalcification, throughout the shafts of some of the long bones. There was periosteal elevation, especially along the femurs.



Fig. 4 (case 2)—Granular type of infiltration of both humeri and the bones of the thorax. There is pleural thickening with fluid in the right side of the chest.

Röntgen Therapy—Roentgen therapy was administered over the epigastrium, cervical glands, axillae and forehead. The factors used were 195 kilovolts, 50 cm focal skin distance, 0.5 mm copper and 1 mm aluminum filtration. From 4.0 to 600 roentgens was administered over the various areas. After the high voltage therapy there was only slight regression in the size of the abdominal tumor. The child's appetite improved somewhat, but she continued to lose ground and died October 14.

Postmortem Examination—The liver was enlarged and there were multiple friable, reddish brown tumor masses around the hilus. In the region of the adrenals there was a large tumor mass extending to either side of the spine and surrounding the aorta and the celiac axis. It involved the adrenals, pancreas and adjacent lymph nodes. There was also involvement of the lumbar vertebrae. The tumor was composed of round or oval cells which varied in size and shape. There was a small amount of cytoplasm. The nuclei were large and vesicular with numerous nucleoli. There was a fine reticulum between the cells. The cells were grouped roughly into large alveoli and these were separated by dense fibrous trabeculae. No rosettes were seen.

Summary Sympathetic neuroblastoma arising in the medulla of the adrenals, with metastases to the pancreas, adjacent lymph nodes, liver and bone marrow.

CASE 3—History—J. B., a white man aged 26, was admitted Nov. 24, 1923, because of aching pain in the neck and nervousness. The family history was irrelevant. The patient was well until four months before admission. His neck suddenly became stiff and remained so for ten days. The stiffness recurred several times, and one day he became dizzy, with palpitation of the heart, dyspnea and pain in the region of the bladder. Afterward the pain in the neck recurred and he suffered occasionally from generalized pains throughout the body. His symptoms became worse at night. There was a history of night sweats, fever and tachycardia at times.

Examination—On admission the patient was well developed and moderately nourished with some pallor. The posterior auricular glands were enlarged, and there was a mass under and posterior to the left ear. The chest was clear. No masses were felt in the abdomen, and the liver and spleen were not palpable. The spine was rigid and, on bending toward the patient moved it as a unit. On further examination this manner of bending was felt to be a protective mechanism.

The Wassermann reaction was negative. A blood count showed red cells 3,540,000 and white cells 6,300 with polymorphonuclears 74 per cent, small lymphocytes 23 per cent, large lymphocytes 1 per cent and transitionals 2 per cent. The basal metabolic rate was +46 and the urine normal.

The spine showed a suggestion of a destructive process in the second cervical vertebra.

Clinical Course—Surgical exploration of the mass beneath the left jaw was done. A soft mass without any definite capsule was found near the vertebral column. Most of this was removed. The tumor appeared to be intimately connected with the body of the second cervical vertebra. The pathologic report was sympathetic neuroblastoma.

Radium pricks were applied over the area of the tumor. A total of 6,000 mg. hours filtered through 2 mm. of lead caused complete disappearance of the tumor to palpation.

Later the patient gradually declined, with increasing anemia and pain in the legs and back. The spleen became palpable. Several of the dorsal vertebrae showed roentgenologic evidence of metastatic lesions, with decalcification and subsequent compression of the bodies anteriorly. Death occurred June 2, 1924.

Postmortem Examination—A tumor nodule 8 mm. in diameter was observed in the spleen. Several nodules were present in the liver. Both adrenals were enlarged and on section the usual brownish yellow tissue was entirely replaced by soft, friable, grayish tumor tissue. The kidneys were normal. Many tumor nodules were found in the vertebrae throughout the spine. The ribs were also involved and there were pathologic fractures present.

Impression Sympathetic neuroblastoma primary in the adrenal, with metastasis to the ribs, spine, spleen, liver and lymph glands.

SUMMARY

In three cases of sympathetic neuroblastoma, radiotherapy caused only temporary improvement. I believe that radiotherapy is of no avail in such cases if there is evidence of metastases. The disease quickly assumes a generalized form and causes a rapid decline and the death of the patient regardless of the treatment employed.

ABSTRACT OF DISCUSSION

DR MERRILL C. SOSMAN, Boston. I am sorry that Dr. Vogt is not here but I think I can speak for him and emphasize the three ideas that he has brought out in the clinics and conferences in Boston. He has had a large experience with this type of tumor. The first one is that a similar appearance, which is seen in the parietal region of the skull in children and in young adults is a perfectly normal phenomenon and is due to the digitations of the sagittal suture between the two parts of the parietal bone. In sympathetic neuroblastoma there is an extension beyond the outer table due to the irritation of the periosteum by the tumor going through the bone. The second fact brought out in his experience is that these tumors are not very radiosensitive. The best we have been able to accomplish is only a mild amelioration. The third point is that this tumor, or this appearance of the bones, may be very exactly imitated by leukemia. In children who have leukemia (and often a leukemia unrecognizable by the blood picture, the so-called aleukemic leukemia) one will find that same area of osteoporosis and little areas which will exactly simulate this sympathetic neuroblastoma. In my experience the leukemia more commonly produces this radiographic appearance than the sympathetic neuroblastoma. These may be seen in the long bones without the skull changes, and without the history I would rather take a chance and call it aleukemic leukemia.

DR COLIN MACDONALD, Melbourne, Australia. During the twelve years that I have been radiologist in the Children's Hospital in Melbourne, where we have what we think is an alert clinical and pathologic staff, we have found only four cases which measured up to satisfactory criteria of Ewing's tumor. But during the last three or four years we have shown adults a condition in the long bones which gives an x-ray picture just like Ewing's tumor but in which our pathologist,

after careful search, has been able to show the rosette histology. As the result of seeing the rosette forms, he searched carefully the adrenal area and has been able to discover a typical neuroblastoma there. We get the typical thickening in the bones, characteristic of Ewing's tumor, but in half a dozen of these careful search has shown in addition to these anaplastic neuroblastomas, which might be thought to be Ewing's sarcoma, this rosette formation. That leads to our conclusion that some of the Ewing's tumors might really be metastatic neuroblastoma. This work has been done by Dr. Rupert Willis. During the last year, he has published a book called 'The Spread of Tumors in the Human Body,' the perusal for which I would commend to my colleagues here.

DR RALPH E. MYERS, Oklahoma City. Dr. Doub has made a valuable contribution to this subject. I am glad he has brought it to our attention again, because I well remember that the first case with which I was confronted ended fatally before I knew what it was. If one has once recognized a case, it is fairly easy to diagnose a second time, but, on the other hand, if one knows nothing about it, it is a very mystifying type of tumor. It appears to me this disease must be more common than the few cases reported seem to indicate, because in my rather limited experience I have had four of them. In one case there was so much protrusion of the eyeballs as to cause necrosis. This was a horrible condition not only for the child but also for the parents. While radiotherapy does not contribute much to the length of life, I believe this condition of the eyes can be prevented. In the two cases which I have treated it has been possible to return the eyes to their normal position and there was no necrosis of the eyeballs. The radiotherapist should endeavor to do at least this much for the patient and the parents.

DR JOHN T. MURPHY, Toledo, Ohio. It is precarious at the present time to state the roentgen dosage given in the treatment of cases a few years back, because we have found by experience that much larger doses are tolerated and that the results are primarily better when these larger amounts are used.

DR HOWARD P. DOUB, Detroit. Dr. MacDonald's remarks with regard to Ewing's sarcoma are pertinent. The neuroblastomas are much more widely disseminated than in the case of Ewing's tumor and also have a somewhat different appearance. The early metastases of the neuroblastomas are demonstrated by the fact that in the cases that we reported the average duration of life was only four and one third months of life from the time we first observed them. The massive doses of x-ray therapy as proposed by Dr. Murphy constitute the correct method of treatment when the disease is localized and when it occurs in a portion of the body where other vital structures will not be irreparably damaged. In the neuroblastomas the disease is so widespread that this massive irradiation is not feasible. The differential diagnosis has been discussed by Dr. Sosman. I did not bring this out in the paper, but two years ago Dr. Hartman and I discussed it before this section in a paper on the roentgen diagnosis of the leukemias and allied conditions. Some of the leukemias and chloroma have very similar x-ray appearances. Some of the changes in chloroma almost exactly simulate those in neuroblastoma, especially the changes along the medial borders of the upper humerus. Some of the roentgen changes would suggest that they are closely allied in their pathology.

A Valuable Experience—One of our highly trained young physicians, long-time resident in a teaching hospital, recently confessed to me that he had just been through one of the most valuable experiences of his ten years of medical study. He had passed his summer on an island where was a large summer community and in the absence of any local physician he had volunteered to hold office hours and prescribe for the needs of his fellow sojourners, his principal armament being a thermometer, his microscope, some bandages, and a few simple drugs. Never before had his powers of observation and his common sense been so thoroughly exercised.—Cushing Harvey, *Consecratio Medici and Other Papers*. Boston: Little, Brown & Co., 1928.

Clinical Notes, Suggestions and New Instruments

LYCOPodium GRANULOMA RESULTING FROM THE USE OF ANAL SUPPOSITORIES

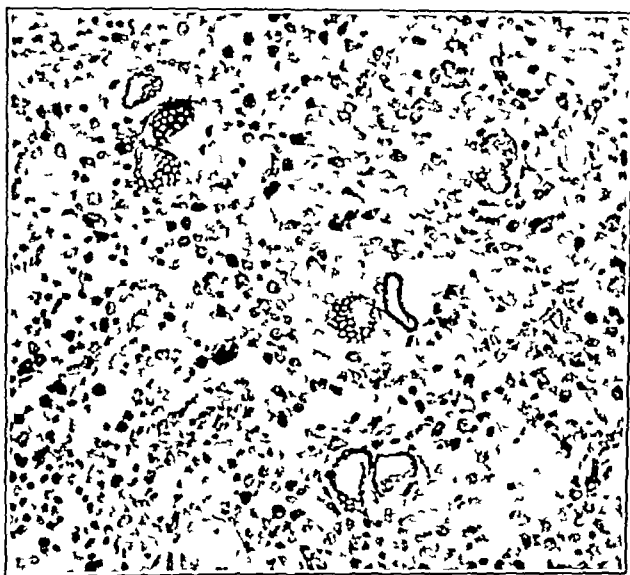
WILLIAM ANTOPOL M.D. AND CHARLES ROBBINS M.D.
NEWARK, N. J.

In 1933¹ five cases of lycopodium granuloma were reported. In these instances the spores of lycopodium clavatum an ingredient of dusting powder used for gloves, had been introduced into the operative field in the course of surgical procedure. These acted as foreign bodies and gave rise to indolent chronic postoperative inflammatory reactions at the original operative site and necessitated secondary operations at a subsequent date. Six similar cases, in which the spores were also introduced during operative procedures were described by Erb² in 1935.

In the original communication¹ it was shown that this substance either impeded the abatement of the existing condition or gave rise to additional complicating factors, and inferentially the use of lycopodium spores as a component of dusting powder on operative implements was cautioned against.

Since that time another instance of lycopodium granuloma has been encountered in which the mode of introduction varied from the modes originally described.

A white woman, aged 33 complained of rectal pain and drainage from the anus and was admitted to the Newark Beth



Lycopodium spore within a granulomatous area (Ziehl-Neelsen stain)

Israel Hospital in March 1935. At this time an external hemorrhoidectomy was performed. Tissue examination revealed external hemorrhoids with no other significant changes. In October, hemorrhoids were again removed at another hospital and these showed 'normal epidermis and fibrous stroma' superficial infiltration with lymphocytes. There was no improvement of symptoms, and the pain and drainage from the rectum continued. In December a fistula in ano was resected and microscopic examination revealed both an acute inflammatory and a chronic granulomatous reaction composed for the most part of plasma cells epithelioid cells occasional multinucleated giant cells eosinophils monocytes and fibroblasts in addition to the spores of lycopodium. Some of the spores were engulfed in foreign body giant cells, shown in the accompanying illustration.

Since the spores of lycopodium were not employed at either hospital in which the operations were done the mode of intro-

duction of the irritating agent remained obscure. When the patient was questioned closely, however, a history of continued use of anal suppositories was elicited. These were frequently employed after the first operation because of pain. On further investigation it was ascertained that the apothecary who compounded these suppositories used the spores of lycopodium for dusting in order to prevent adhesion to the wrapper. The patient was kept under strict observation, and measures were taken to preclude the possibility of reintroduction of spores. The wound healed rapidly and at the present writing fifteen months after the last operation, there has been no recurrence of symptoms.

SUMMARY

1 A case of lycopodium granuloma was seen in which the spores had been transferred from the surface of anal suppositories into an hemorrhoidectomy wound.

2 This case presents another instance in which it is shown that the use of lycopodium spores in the region of open wounds is not entirely innocuous.

201 Lyons Avenue

NEOPLASTIC INVOLVEMENT OF THE HEART

TWO CASES DIAGNOSED BEFORE DEATH

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Instructor in Internal Medicine University Hospital

Tumors of the heart and pericardium are rare as either secondary or primary growths. Still rarer is the opportunity to see this type of case and to diagnose it during life. Two such cases were admitted to the medical wards of the University Hospital during the first four months of 1936 and in both of them the correct diagnosis was made. The literature reveals only five cases of secondary tumors of the heart diagnosed before death. Three of these were diagnosed on the basis of cardiac irregularity in patients with extensive neoplastic involvement of other regions of the body.¹ One patient was a young girl in whom symptoms of cardiac embarrassment developed some time after the removal of a sarcoma of the lower extremity.² To this group of cases are added the two reported here.

REPORT OF CASES

CASE 1—History—A white woman aged 31, was admitted to the medical service of the University Hospital with the history that two years before a wartlike lesion behind the right ear had been cauterized, after which she was given roentgen therapy to the area. This was followed by the development of lumps in various parts of the body with resolution of a few after treatment. For one month prior to admission she had noted increasing pallor and dyspnea on exertion. Two months prior to admission there was an attack of a pleuritic type of pain associated with a febrile illness. This lasted one week and there was hemoptysis on one occasion and slight cough. Other history was noncontributory.

Examination—The only positive manifestations found on physical examination were multiple subcutaneous masses slight dulness at the base of the right lung and a pericardial friction rub. The laboratory studies revealed a leukocytosis of 73,400 with 93 per cent polymorphonuclears. Roentgenographic study of the chest showed obvious cardiac enlargement with marked broadening of the transverse diameter very marked increase in bronchovascular markings with apparently closely associated infiltrative changes in the lung along the main bronchial distribution in the right base. These changes were believed to be due either to an inflammatory process or to neoplastic invasion (fig. 1). The course was essentially downhill, intractable pain being present from the neoplastic nodules. After approximately ten days in the hospital the friction rub had disappeared. The clinical impression was probable melanoblastoma with metastases to the right lung, pericardium, heart, liver and subcutaneous tissue.

1 Fishberg A. M. Auricular Fibrillation and Flutter in Metastatic Growths of the Right Auricle. *Am J M Sc* 180: 629-634 (Nov.) 1930.
2 Willy F. A. and Amberg Samuel. Two Cases of Secondary Tumor of the Heart in Children in One of Which the Diagnosis Was Made During Life. *M Clin North America* 13: 1307-1316 (Mar) 1913.

From the Surgical Service and Division of Laboratories of the Newark Beth Israel Hospital.

1 Antopol William. Lycopodium Granuloma. *Arch Path* 16: 326 (Sept.) 1933.
2 Erb I. H. *Surg Gynec & Obst* 60: 40 (Jan) 1935.

Postmortem Examination—The pathologic diagnosis was metastatic melanotic melanoblastoma involving the liver, lungs, mediastinum, heart, adrenals, subcutaneous tissue, sternum, ribs, vertebral bodies and multiple lymph nodes throughout the body. Neoplastic polypoid thrombi were found in the left ventricle attached to the mitral leaflet. Examination of the heart revealed a fibrous exudate externally on the right and the pericardial sac was almost completely obliterated. An attempt at separation of the two layers of the pericardium revealed fibrous union as well as extensive infiltration by soft dark gray red masses of neoplasm. This was apparently in direct continuity with a supradiaphragmatic mass found in the lower lobe of the right lung.

CASE 2—History—A white woman aged 25 admitted to the medical service, complained of a mass in the right upper quadrant and shortness of breath. This mass had been present for four months, increasing from the size of a lemon to that of a watermelon. During the month prior to admission she had had increasing shortness of breath. There had been chills and fever to 102 F associated with migratory muscle pains starting in the neck, radiating down the right arm and to the right calf. She had noted increasing pallor associated with dyspnea. For two weeks prior to admission edema of the ankles and face had been present. There had been a slight cough for a week prior to admission. The patient stated that she was able to lie on the right side with ease but became dyspneic when lying on the left side. There was no history of antecedent rheumatic infection.

Examination—On admission the patient was dyspneic and pale, with puffiness of the face. The heart was markedly enlarged to the right of the parasternal line and the left border of dullness was at the anterior axillary line. There was a systolic thrill at the apex and at the apex and in the second intercostal space on the left auscultation revealed a high pitched blowing systolic murmur and a loud low pitched diastolic murmur. The pulmonary second sound was accentuated. Abdominal examination revealed a huge tumor extending 12 cm below the right costal margin and to a point well below the umbilicus. Laboratory studies revealed only a severe secondary anemia.

The x-ray examination of the chest showed gross cardiac enlargement of indeterminate cause and patchy disseminated infiltration of both lung fields (fig 2). The electrocardiogram showed the heart rate to be 120 per minute with atrioventricular rhythm, abnormally small complexes and inverted T waves in all leads (? digitalis effect).

The clinical diagnosis on admission was neoplasm of the liver and rheumatic heart disease with mitral stenosis. The latter diagnosis was later changed to neoplasm involving chiefly the right side of the heart. This diagnosis was based on the abdominal neoplasm the

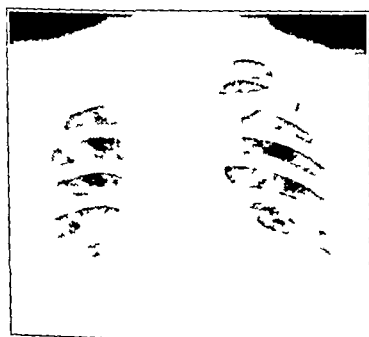


Fig 1 (case 1)—Area of increased density along the right border of the heart

marked abnormality in the cardiac silhouette in the x-ray film, the failure to respond to digitalis therapy, the abnormality in the electrocardiographic tracings and the absence of any obvious cause for the cardiac enlargement. It was thought that a right auricular tumor involving the sino auricular node might explain the abnormal cardiac rhythm.

Postmortem Examination—The pathologic diagnosis was primary spindle cell sarcoma (? hemangiosarcoma) of the liver with metastases to the liver, heart, lungs, lymph nodes, kidney, adrenals and right ilium. The heart was grossly enlarged, weighing 630 Gm. When the pericardial adhesions were cut through there were nodular and hemorrhagic areas over the right auricle and intraventricular septum, most pronounced about the pulmonary artery. There was no abnormality of the mitral valve. Within the intraventricular septum and about

the coronaries were found areas of whitish yellow neoplastic tissue. The right auricle was markedly enlarged, the enlargement being due to many nodules, apparently within the auricle. Extending out to the base of the pulmonary valve in the posterior area was a thickened mass 10 by 20 mm showing similar neoplastic areas.

COMMENT

It is not my purpose in this paper to give a summary of all the literature to date concerning primary or secondary tumors of the heart, but it would seem proper to present previous observations in the literature that are of help in diagnosing such a condition. In the most comprehensive article on tumors of the heart and pericardium, written by Yater in 1931³ there is a classification well worth reviewing. He groups these cases logically into those in which the clinical type is not suggestive of tumor of the heart and those in which the type is suggestive of such a diagnosis. Under the first type he groups those in which there is sudden death, terminal cardiac embarrassment, symptoms of congestive heart failure or lastly symptoms suggestive of subacute bacterial endocarditis. In the second group there are



Fig 2 (case 2)—Gross cardiac enlargement with prominence of the right auricle

various abnormalities such as heart block, symptoms referable to the location of the tumor other than heart block, symptoms of cardiac dysfunction developing without apparent cause in a patient with a known malignant process, accumulation of hemorrhagic fluid in the pericardial sac and, lastly, suggestive x-ray signs. Yater believes that in a certain percentage of cases symptoms of congestive heart failure may develop and that when the clinician is unable to find other etiologic agents he may be justified in placing it in the group of metastatic neoplastic involvement.

As regards the physical changes in neoplastic involvement of the heart perhaps one of the most frequent is the presence of a murmur believed typical of mitral stenosis. This is often due to a pedunculated tumor of the right or left auricle causing a functional stenosis of the tricuspid or mitral orifice with certain changes in position. Ludwig⁴ presents a case in which mitral stenosis was diagnosed and collected twenty others from the literature in which mitral stenosis was suspected during life and autopsy showed neoplasm involving the auricular muscle.

In the group of changes referable to the heart directly one of the most important is abnormality disclosed by the electrocardiogram. Yater believes that heart block is one condition in which metastatic neoplasm should be considered as a possible etiologic agent. Fishberg¹ has presented three cases of abnormal rhythm in which the diagnosis of neoplastic involvement of the heart was made before death. Two of his cases presented auricular fibrillation and one auricular flutter.

In the first of the two cases presented here the diagnosis was suspected because of the pericardial friction rub at the base of the heart. The diagnosis was supported by the finding on x-ray examination of an area of increased density along the right border of the heart which extended into the pulmonary parenchyma. The possibility of a neoplastic thrombus in the heart was also considered in this case because of the widespread metastases, including subcutaneous metastases which were apparently hematogenous in origin. In the second case the diagnosis was suspected because of the history suggesting neoplastic involvement of the liver coupled with the sudden

³ Yater, W. M. Tumors of the Heart and Pericardium. Pathology, Symptomatology and Report of Nine Cases. Arch. Int. Med. 48: 627-666 (Oct.) 1931.

⁴ Ludwig, cited by Gilchrist, A. R. and Millar, W. G. Paroxysmal Auricular Tachycardia with Primary Tumor (Myxoma) with Pathological Report. Edinburgh M. J. 42: 243-258 (April) 1936.

onset of symptoms of cardiac failure. Here the physical examination revealed a diastolic murmur at the apex and along the left border of the sternum. This was at first thought to be a mitral murmur, but no history of rheumatic infection could be elicited and after the x-ray film was seen it was felt that the murmur might well be due to an intracardiac metastatic neoplasm. This opinion was supported by the course of the patient's illness, her failure to respond to digitalis and the widespread neoplastic involvement elsewhere revealed by the x-ray examinations. The x-ray appearances were particularly suggestive of tumor involving the right side of the heart. The patient's ability to lie on the right side of the body and not on the left offered a possible explanation of the cardiac embarrassment. It was thought to be caused by pedunculated intracardiac mass. It was felt, therefore, that an antemortem diagnosis of secondary cardiac involvement was justified in both cases.

CONCLUSION

1 In the two cases of secondary involvement of the heart by malignant neoplasm there were adequate clinical and laboratory data to warrant a diagnosis before death.

2 The observations that made such a diagnosis possible were, in one case, a pericardial friction rub and, in the second case, the presence of atrioventricular rhythm revealed by the electrocardiogram, and the presence of a definite diastolic murmur which could not easily be accounted for on any other basis.

STAPHYLOCOCCIC ENDOCARDITIS SUPERIMPOSED ON SYPHILITIC AORTIC ENDOCARDITIS

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E. LLOYD WILBUR, M.D., DURHAM, N. C.

Bacterial infection superimposed on syphilitic endocarditis is of interest because of the paucity of proved cases reported in the literature and the rarity of the infections occurring simultaneously, although each is common as a separate entity.

Kastner¹ in 1918, Briggs² in 1922, Pineles³ in 1926 and Craven⁴ in 1932 have each reported one case proved by autopsy. Other cases have been reported which have not been proved by autopsy but which presented aortic insufficiency, blood cultures positive for *Streptococcus viridans* and positive Wassermann reactions of the blood.

Cotton,⁵ in a study of fifty cases of aortic insufficiency agrees with other authors that prior to the age of 40 rheumatic lesions predominate whereas after 40 the lesions are almost entirely syphilitic or atherosclerotic. He corroborates the well known fact that bacterial endocarditis occurs as a rule in youth or young adulthood. Bayne-Jones⁶ has emphasized the increased vascularity of the valves involved in rheumatic fever which renders these damaged valves more liable to superimposed bacterial infection. The absence of this factor in syphilitic endocarditis may account for the extremely low incidence of bacterial infection.

Clinically, the diagnosis cannot be made on the basis of demonstrable aortic regurgitation, with positive Wassermann reaction and blood culture, but must depend on previously diagnosed syphilitic endocarditis and subsequent evidence of bacterial infection of the endocardium.

REPORT OF CASE

History—J. E. R., a white man, aged 47, a painter, first seen in the Duke Hospital Medical Dispensary March 21, 1935, complained of heart trouble of five years and stomach trouble of two years' duration.

The family and marital histories were not of interest.

From the Departments of Medicine and Pathology, Duke University School of Medicine.

¹ Kastner, A. Ueber Endocarditis lenta. *Deutsches Arch. f. klin. Med.* 126: 370-413 (June) 1918.

² Briggs, L. H. Bacterial Endocarditis as a Sequel to Syphilitic Valve Defect. *Am. J. M. Sc.* 164: 275-281 (Aug.) 1922.

³ Pineles, F. Aortenlues und Endocarditis lenta. *Med. Klin.* 22: 444-445 (March 19) 1926.

⁴ Craven, E. B., Jr. Syphilitic Aortic Endocarditis and Superimposed Bacterial (*Streptococcus Viridans*) Endocarditis. *Am. J. Path.* 8: 81-90 (Jan.) 1932.

⁵ Cotton, T. F. Observations on Aortic Disease in Soldiers. *Lancet* 2: 470-473 (Sept. 13) 1919.

⁶ Bayne-Jones, Stanhope. The Blood Vessels of the Heart Valves. *Am. J. Anat.* 21: 449-465 (May) 1917.

The past history showed excellent general health up to the onset of the present illness. There were the usual childhood diseases, typhoid in 1900 (at the age of 12), a generalized skin eruption diagnosed chickenpox in 1925 (at the age of 37) and a hemorrhoidectomy in 1934. In 1906 (at the age of 18) he had a primary chancre which was treated locally only with a dusting powder. In 1920 (at the age of 32) the Wassermann reaction of the blood was reported 4+, and he was given six injections each of arsphenamine, a bismuth compound and mercury.

He felt well until 1931, when, while exercising vigorously, he had an attack of precordial pain lasting thirty minutes associated with marked dyspnea. From this time on he noticed dyspnea on exertion and had many such attacks, which incapacitated him. Between the summer of 1934 and admission to the clinic, intermittent swelling of the feet and ankles and finally abdominal swelling developed. The precordial pain and dyspnea became progressively more severe. For the first attack of precordial pain his physician administered morphine hypodermically, and a well established addiction to the drug soon developed. The patient finally requiring 7 or 8 grains (0.45 or 0.5 Gm.) daily. It is of particular significance and interest in this case that for the last year of his life he had been giving his own injections intravenously, with poorly sterilized tap water.

Examination—The patient was large and well nourished and was in obvious respiratory distress. The head jerked with each heartbeat and all visible arteries were pulsating forcibly.

The skin was clear. The cervical, axillary and epitrochlear lymph nodes were slightly enlarged. The pupils were small round and equal and reacted to light and in accommodation. The optic fundi were normal except for marked pulsation of the arterioles. The trachea was in the midline, and no tracheal tug was felt.

The thorax showed a bulge over the precordium and an increase of the anteroposterior diameter with retraction of the costal borders on inspiration. The percussion note over the lungs was resonant, and the breath sounds were clear.

The heart was greatly enlarged, the apex being 15 cm. to the left of the midsternal line in the sixth intercostal space. There was very little enlargement to the right. The supracardiac dulness was 8 cm. The cardiac impulse was forceful and diffuse. Over the entire precordium a loud blowing systolic murmur and a murmur occupying the whole of diastole were heard. These were most intense in the second right interspace and were there accompanied by a systolic thrill. The heart rhythm was regular, with a rate of 90. The blood pressure was 170 systolic, 70 diastolic. Corrigan and capillary pulses and pistol-shot femoral sounds were prominent and equal, on the right and left.

The liver border was felt 6 cm. below the right costal margin and was tender. There was slight edema of the feet and ankles. Motor, reflex, sensory and coordination tests gave normal results.

Laboratory examination revealed hemoglobin, 11 Gm. 71 per cent of 15.5 Gm. (Sahli), red blood cells, 3,110,000, urine, no albumin, sugar, casts, red blood cells or white blood cells. The Kahn reaction was 3+.

The diagnosis at this time was syphilis of the aorta, involving all parts of the aorta from the aortic valves through the arch, aortic regurgitation, cardiac hypertrophy and dilatation with beginning congestive heart failure.

Digitalis and potassium iodide were prescribed and he was instructed to rest and return to the syphilis clinic for further treatment. However, he did not return for his treatment and was next seen December 26 in severe congestive failure and practically moribund. For two or three days previously he had had facial edema and crops of erythematous lesions. He had also had several chills and some fever.

The temperature was 37.2 C (99 F), the pulse 90 and the respiration rate 28. He was in extreme respiratory distress with Cheyne-Stokes breathing. Marked generalized edema was present.

Scattered over the skin of the face, arms, neck and thorax were numerous papular erythematous lesions that blanched slightly on pressure. The mucous membranes were very pale.

The heart was essentially as noted on the previous admission except that the supracardiac dulness was 10 cm. The blood pressure was 194 systolic, 72 diastolic.

There was marked hepatomegaly with tenderness. The spleen was not felt.

Accessory examinations revealed, hemoglobin 9 Gm. 57 per cent of 15.5 (Sabin), red blood cells 2,500,000, white blood cells, 11,000, of which 80 per cent were polymorphonuclears with a preponderance of adult forms. The Kahn reaction was 3+. The urine was dark and cloudy, with albumin 4+, acetone 1+, and an occasional red blood cell. The benzidine test was positive. The nonprotein nitrogen of the blood was 10.2, creatinine 9.2 mg. per hundred cubic centimeters, and refractive index 1.0493. The electrocardiogram showed normal sinus rhythm, intraventricular block, and left axis deviation. The spinal fluid (post mortem) gave a normal reaction with the Wassermann, the colloidal, the mastix and the Pandy test. No cells were present.

The patient became progressively worse and died December 27, twenty-four hours after admission.

The diagnosis was (1) syphilis of the aorta with fusiform aneurysm, (2) aortic regurgitation, due to syphilis with cardiac hypertrophy and congestive failure, (3) subacute glomerulonephritis, and (4) suspected bacterial endocarditis.

Autopsy.—The anatomic diagnosis with the history of morphine addiction and syphilis was as follows: Syphilitic aortitis with formation of aneurysm, syphilitic aortic endocarditis with aortic insufficiency, cardiac hypertrophy and dilatation, chronic meningitis (syphilitic), aortic and mitral vegetative endocarditis (hemolytic *Staphylococcus aureus*), embolic acute arteritis (jejunum), subacute glomerulonephritis, infected infarct of the spleen, acute splenic tumor, chronic passive congestion of the lungs and liver with thrombosis of the veins of the right forearm, and adenoma of the islands of Langerhans.

Macroscopic Observations. The body was very emaciated. There was a purplish papulovesicular rash on the neck in the

One, syphilitic in origin was characterized by a separation of the cusps at the point of attachment. The other was a series of wartlike vegetations 2 mm in diameter, close to the free edge of the cusps. On the left coronary cusp was a sessile mass 5 mm in diameter. A similar vegetation was found on the endocardium 1 cm below the posterior cusp apparently opposite the vegetations on the mitral valve. The anterior



Fig. 2—Aortic valve with vegetations and syphilitic lesions

cusp of the mitral valve had two sessile masses of vegetation located about 4 mm from the free edge. One of these was 1 cm and the other 0.5 cm in diameter. These extended through the cusp and presented on both surfaces. The mitral valve showed no thickening of the free edges of the cusps or of the chordae tendineae.

There was an aneurysm 8 cm in diameter, beginning in the sinus of Valsalva and extending 1 cm distal to the origin of the left subclavian artery. The wall of the aneurysm showed much calcification. There was a moderate amount of sclerosis in the remainder of the aorta.

The liver was enlarged, weighing 2410 Gm. The kidneys each weighed 240 Gm and had finely granular cortical surfaces in which were numerous petechial hemorrhages.

The spleen weighed 650 Gm and contained a fresh infarct measuring 6 by 5 by 10 cm. A purulent fluid oozed from the cut surface of this infarct.

Microscopic Observations. The section of the aortic valve showed much fibrous thickening. On the surface of the valve was much granulation tissue and necrotic debris in which were clouds of gram positive cocci.

The walls of the aneurysm were composed of scar tissue and particles of calcium. A few collections of round cells were seen close to the adventitia.

Clouds of gram positive cocci were found in the splenic infarct. There was a subacute glomerulonephritis and some degeneration of the epithelium of the convoluted tubules.

In the meninges there was a moderate round cell infiltration. There were some focal areas of degeneration in the brain. These were not limited to any particular areas.

An incidental finding was an adenoma of islet tissue in the pancreas. This measured 5 by 4 by 3 mm.

Postmortem culture of the spleen showed a pure growth of hemolytic *Staphylococcus aureus*. Smears of the splenic infarct showed clusters of gram-positive cocci.

SUMMARY

The case presented is the fifth recorded proved case of bacterial infection superimposed on syphilitic aortic endocarditis.

Final proof of such a case rests on autopsy and bacteriologic studies but the diagnosis may be suspected clinically in a person with syphilitic aortic insufficiency of long standing in whom manifestations of bacterial endocarditis subsequently develop.

The case cited is of further interest because of the fact that the patient was injecting unsterilized solutions into his own veins, this probably being the mode of infection.



Fig. 1—Heart and aorta with aneurysm

region of the jugular notch and on the surfaces of both forearms following the courses of the superficial veins. These lesions were discrete and well circumscribed. They did not resemble petechiae.

Each pleural cavity contained 600 cc of a clear straw-colored fluid and the peritoneal cavity contained 2,000 cc of a similar fluid.

The heart weighed 750 Gm and the aortic ring was dilated. There were two types of lesions involving the aortic valve.

POSTERO ANTERIOR X-RAY VIEW OF KNEE
IN FLEXION

EDWARD C. HOLMBLAD, M.D., CHICAGO

The accurate diagnosis of pathologic conditions of the knee joint is at its best a difficult task before operation. X-ray study has been a great aid but in some cases the pathologic

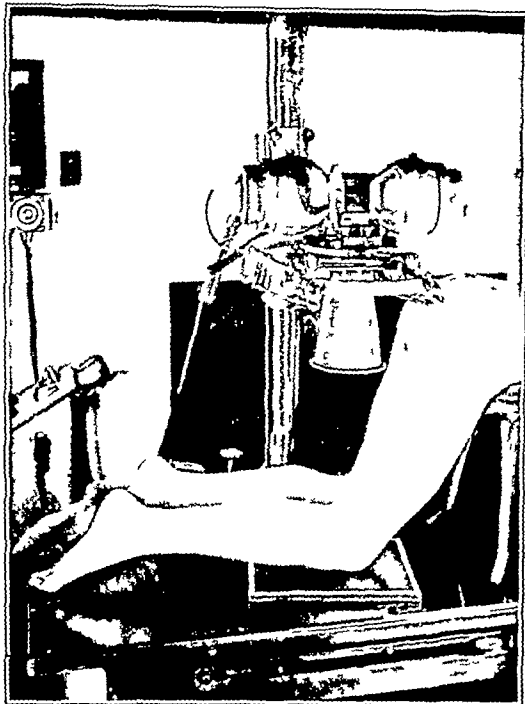


Fig. 1.—Position of patient in which the x-ray films are taken

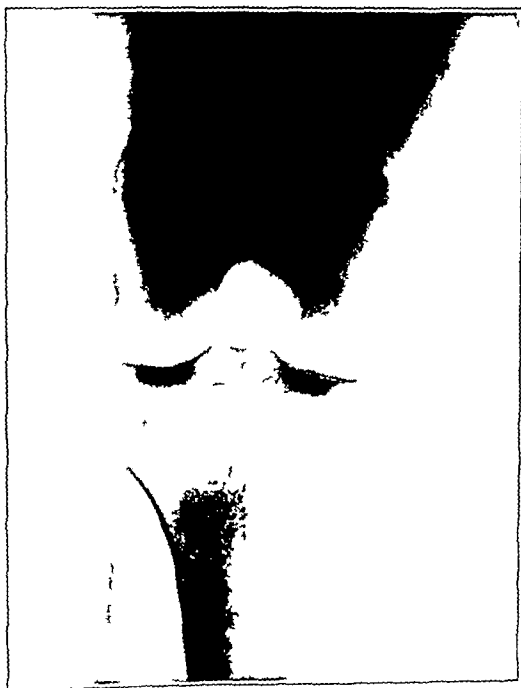


Fig. 2.—Normal knee of man aged 25. Intercondylar notch clear, tibial spines smooth, joint surfaces smooth, margins of tibia and femur normally rounded.

condition cannot be demonstrated. In quite a few cases the clinical history is strongly suggestive of joint mice, which are not demonstrated on the usual x-ray views. The overlapping shadows of the patella hidden behind the lower portion of the femur and the knee joint ramifications on the anterior

surface of the femur are difficult to visualize on postero anterior views or anteroposterior views with the leg extended. Small or faint shadow-casting foreign bodies, "joint mice" or osteophytes are frequently not visualized. The joint surfaces are not clear sharp or well separated. The detail of the upper end of the tibia is not always sharply defined, and incomplete fractures or atypical fractures of the upper tibia extending into the joint may require the superior ability of the expert x-ray diagnostician.

It was with the hope of improving x-ray technic in this particular respect that this problem was approached.

During the past years simple knee cases have been studied in lateral and postero-anterior views. More difficult knee problem cases have prompted in addition the use of oblique views, both internal oblique and external oblique. These are sometimes called quartering views. They are especially advantageous in studying the condyles of the femur and the patella.

During the summer of 1936, views were taken on curved cassettes with the knee in flexion and the cassettes placed in the popliteal space. This resulted in considerable distortion but was an improvement in visualizing the intercondylar notch of the femur.

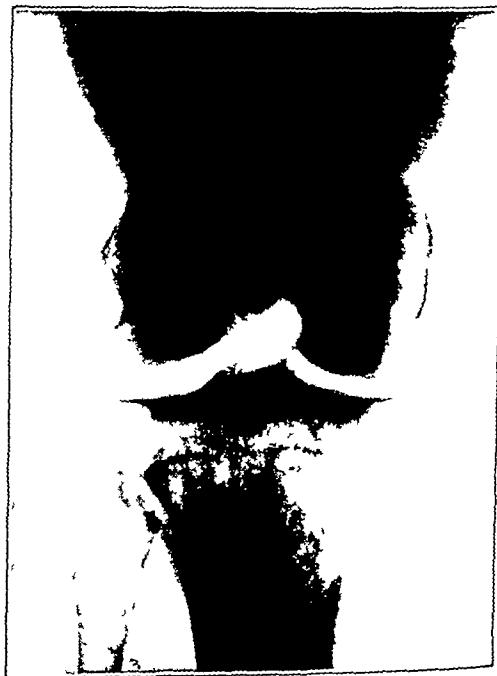


Fig. 3.—(man aged 57, weight 244 pounds or 111 kg.)—Tibial spine, sharp and pointed intercondylar margin of medial condyle of femur shows early osteoarthritic flapping and spur formation.

In February 1937 a new position was employed. It was designed to use the intercondylar notch of the femur for better visualization of the tibial spines and attachments of the cruciate ligaments and the knee joint. This view was taken as shown in the accompanying illustrations. It is taken postero anteriorly with the knee flexed 75 degrees, the tibia nearly paralleling the top of the table. In cases in which there is limitation of ankle motion, the foot is permitted to hang over the end of the table thereby maintaining the lower leg parallel to the top of the cassette or film.

Films in exposure envelopes or in exposure holders, films in cassettes or the Potter-Bucky technic can be used as desired to obtain the best results.

Studies of films made in these views have disclosed several distinct advantages over the usual postero anterior view in full extension.

1. There is a much better visualization of the intercondylar notch of the femur with osteoarthritic flapping frequently seen at the margins that cannot be viewed in the usual exposures.

2. It is noted that the tibial spines are brought out in a clearer profile and the troublesome overlapping shadow eliminated.

ated. In this way the attachments of the cruciate ligaments are studied and avulsion fractures of ligamentous attachments are much more readily recognized.

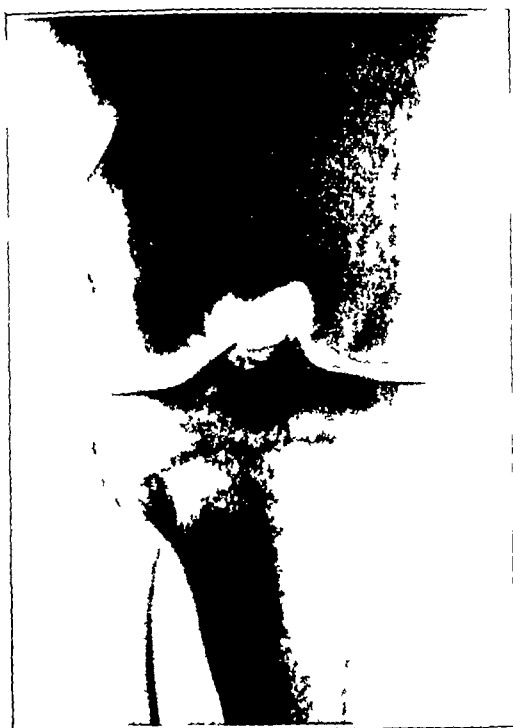


Fig. 4 (man aged 50)—Tibial spines are sharp and pointed both margins of intercondylar notch are markedly roughened and irregular because of osteo arthritis. A small osteophyte or joint mouse is noted near the intercondylar margin of the medial condyle of the femur.

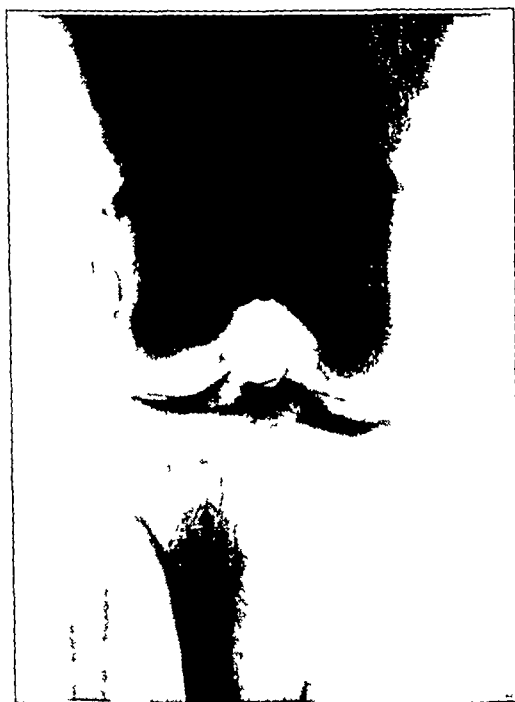


Fig. 5 (man aged 50)—History of frequent knee joint locking, prominent tibial spines, a large osteophyte or joint mouse is demonstrated in the intercondylar notch.

3 The degree of flexion of the knee in which this view is taken permits a greater relaxation of the knee joint and therefore widens the joint spaces between the tibia and the femur giving a much clearer study of the joint and the joint surfaces of the tibia and femur.

4 When the upper and anterior portion of the tibia is the site of special study, this view yields much clearer and more diagnostic detail. It is a fundamental principle of x-ray technique that the closer a bone can be brought to the film the clearer the bone detail and sharper the x-ray shadows. With the leg extended the patella lies between the tibia and the film. With the knee flexed the tibia is permitted to rest directly on the film.

5 In this view the distal third of the patella is visualized in the anteroposterior view and the site of attachment of the infrapatellar tendon is readily seen.

6 Because of a better visualization with the knee joint spaces widened and the intercondylar notch visualized, osteophytes, joint mice, loose bodies and foreign bodies are much more easily seen and demonstrated.

7 In cases in which there is lack of full extension such as flexion deformity of the knee with partial or complete ankylosis this view can easily be taken. It therefore affords an excellent opportunity to study such knee joints for diagnosis and also in anticipation of corrective surgery as arthrodesis.

8 It gives an anteroposterior profile study of that portion of the joint surface on the condyles of the femur lying posteriorly. In cases of osteochondritis dissecans the crater areas on the condyles can be seen.

9 This view does not require any special apparatus. It is so simple that it can be done in any place equipped to take roentgenograms. A word of caution is given to those not yet provided with shock proof equipment. The danger of having an exposed wire within sparking distance of the buttocks should be avoided. This can be done by raising the tube and increasing the distance from the tube to the film.

28 East Jackson Boulevard

Special Clinical Article

UNUSUAL ASPECTS OF HYPERTHYROIDISM

CLINICAL LECTURE AT ATLANTIC CITY SESSION

C. W. DOWDEN, M.D.

LOUISVILLE, KY.

The symptoms and signs which characterize the onset and course of typical hyperthyroidism are too well known to be repeated. For the purpose of this discussion, I shall consider the effect of an increased amount of thyroxine in the circulating blood and shall not attempt to differentiate between exophthalmic goiter and the toxic adenoma of Plummer. Although there is some difference in the onset and severity of symptoms of these two types, the effect in general on the nutritional state, the nervous and circulatory systems and the reaction of the body are the same. Unquestionably there has been and still is a tendency to depend largely on the basal metabolic rate for diagnosis. In my section of the country, at least according to my experience, in a large number of determinations an overwhelming majority are on the minus side and rates of from minus 10 to minus 15 per cent are not infrequent for persons with conditions not associated with the thyroid and with normal quantities of blood cholesterol. It must be evident, therefore, that when hyperthyroidism or hypermetabolism occurs in this group, even with a 20 per cent increase, the figures for the basal metabolism will fall within the established normal range. It is by no

Dr. Morris Flexner and Dr. A. B. Loveman provided cases 4 and 6 respectively. Dr. A. J. Miller furnished the pathologic reports.

Read in the General Scientific Meetings at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 7, 1937.

means a fault of the apparatus but is the fault of the physician in not determining the patient's normal rate and in failing to evaluate properly the state of nutrition and the symptoms particularly referable to the nervous and circulatory systems. Since iodine is anticalorigenic, it can usually be depended on to determine the normal metabolic rate when there is any doubt. While I approve of the present attitude concerning the use of iodine, my own experience has convinced me that in selected cases it may be employed successfully in the treatment of hyperthyroidism, and by its intermittent use one will continue to get its anticalorigenic effect.

CASE 1—A man aged 32, examined in December 1927, had suffered for eleven years from palpitation, emotional instability, general weakness, loss of weight in spite of a splendid appetite, dizziness and fainting attacks. The pulse rate was 80 and the blood pressure 120 systolic 80 diastolic. At that time he had a typical duodenal ulcer, which was confirmed radiographically. In December 1929 the symptoms of ulcer had disappeared, but the other symptoms referable to the nervous system had increased. The pulse rate was 100 and the blood pressure 128 systolic, 70 diastolic. In October 1931 there was a marked increase in all the symptoms and in spite of the splendid appetite there was a loss of 20 pounds (9 Kg.) in weight. The thyroid was now definitely enlarged and nodular. A bruit was heard over the gland. There were marked pulsation in the vessels of the neck and a fine tremor of the fingers. The pulse rate was 100 and the blood pressure 160 systolic, 80 diastolic. There were no ocular signs. The electrocardiogram was normal. The basal metabolic rate was minus 7.7 per cent. Two months later, after the patient had taken 5 drops of compound solution of iodine daily, there was a gain of 10 pounds (4.5 Kg.) in weight, the pulse rate varied from 76 to 90 and the blood pressure was 160 systolic 88 diastolic. He was stronger and not so easily excited or nervous.

In April 1932 marked heat intolerance developed in spite of the fact that the patient had spent three years on the deserts of Mexico without discomfort. Now it was almost impossible for him to enter a moderately warm room. The administration of iodine was continued, and by July 1932 he had gained another 10 pounds (4.5 Kg.), or 20 pounds (9 Kg.) in all, the pulse rate was 84, although he occasionally had palpitation, the blood pressure was 150 systolic 80 diastolic, the thyroid was unchanged. In September 1932, the administration of iodine having been discontinued he was again nervous and emotionally unstable, the pulse rate was 104, the blood pressure 158 systolic, 80 diastolic and the basal metabolic rate plus 7.2 per cent. Iodine was then taken intermittently and he was not seen again until January 1934, immediately after completing a two weeks period on iodine. This time the pulse rate was 70, the basal metabolic rate was minus 12.5 per cent, a drop of practically 20 points, which was looked on as a positive response to iodine. The iodine was then taken for two weeks of every four, and on Feb. 26, 1934 after a period without iodine the basal metabolic rate was minus 11.8 per cent, the pulse 76 and the blood pressure 120 systolic, 70 diastolic. He had regained his lost weight, the nervous symptoms had subsided and there remained only the tremor of the fingers and the palpable thyroid gland. The administration of iodine was discontinued and a year later there had been no return of symptoms.

Thus, then, is a fairly typical example of the usual course of toxic adenoma. The basal metabolic rate was misleading until the normal rate was determined by the use of iodine and found to be in the neighborhood of minus 12 per cent. An increase of 20 per cent, which would be expected, made it only plus 7 per cent.

Occasionally, exophthalmos and the directly associated signs are the only indication of exophthalmic goiter.

CASE 2—A man, aged 36, an executive seen in June 1922 had had extreme bilateral exophthalmos for six months. He was not nervous or emotionally unstable, the appetite was normal, and the weight had been constant for eight years. There was no heat intolerance, diarrhea or in fact any symptom referable to the various systems of the body.

Occasionally, however, it is necessary to discount such a history, especially coming from men. Objectively, there was marked exophthalmos, with the sclera plainly seen above the cornea, there were lid lag, widening of the orbital slits, infrequent winking and poor convergence. The pulse rate was 60 and the blood pressure 122 systolic, 62 diastolic, there was definite tremor of the fingers, but the thyroid could not be palpated. The basal metabolic rate was plus 20 per cent. From June 1, 1922, to April 1, 1923, the patient had thirteen x-ray exposures over the gland, and during this time six determinations of the basal metabolism were made. The values ranged from plus 22 to plus 10 per cent, the pulse rate from 74 to 60 and the weight from 124 to 133 pounds (56 to 60 Kg.) at the completion of treatment.

Five years later the ocular signs had perceptibly increased but with the exception of palpitation following strenuous exertion no other symptoms had appeared. The pulse rate was 68, the blood pressure 118 systolic, 72 diastolic, and the basal metabolic rate plus 29 per cent. Compound solution of iodine, 10 minims (0.6 cc.) twice daily, was prescribed, and the basal metabolic rate was promptly reduced from plus 25.5 per cent to plus 17 to minus 9 and, by September 1927 to minus 14.5 per cent, the pulse rate was reduced from 76 to 60, and the weight was increased from 128 to 138 pounds (58 to 62 Kg.). In October 1927 a subtotal thyroidectomy was done, 12 Gm. of tissue being removed. Microscopic examination showed that this was hypertrophic parenchymatous thyroid tissue. It was noted at operation that each lobe was approximately normal in size. For a period of four months thyroid was administered in varying doses.

The patient was not seen again for six years, at which time there was no more protrusion of the eyeballs than is often seen in normal persons, but he continued to have the irregular heart action after exercise and also the tremor of the fingers. The weight was 150 pounds (68 Kg.), the pulse rate 56, the blood pressure 128 systolic, 80 diastolic and the basal rate minus 13 per cent. The thyroidectomy had relieved the exophthalmos but did not influence the other minor toxic symptoms.

Symptoms typical of thyrotoxicosis, even to the initial rise of the basal metabolic rate, are often seen with nervous disorders of the autonomic imbalance group. When this is the case, the diagnosis is not always simple. Unfortunately, some patients sacrifice portions of the thyroid, thus adding, later on, to their nervous instability the symptoms of myxedema. Others are denied thyroidectomy because the associated hyperthyroidism is not recognized. Rest and sedation usually restore the basal metabolism and the blood pressure to normal in the nervous person, but the thyrotoxic person is not thus relieved until iodine is administered, which promptly alleviates most of the symptoms. One may observe two other differences which are adaptable to clinical demonstration and which in my opinion have not been sufficiently stressed. First, the pulse rate in the autonomic group does not parallel the basal metabolic rate as it does in the thyrotoxic group, and, second, the pulse pressure is not wide as it practically always is in the thyrotoxic group.

Since popularization of the basal metabolic rate among members of the medical profession, there has been a tremendous stimulus to thyroid feeding for practically all conditions associated with a lowered metabolic rate, especially obesity and exhaustion. Frequently it is very effective, particularly if there is hypercholesterolemia. Often it is indefinitely continued, until the characteristic signs and symptoms of hyperthyroidism appear.

CASE 3—A woman aged 44 was suffering from extreme nervousness, palpitation, tremor, loss of weight and such heat intolerance that she would faint on entering a warm room. She had a stimulated mental attitude and increased perspiration. The pulse rate was 120 and the basal metabolic rate was plus 10 per cent. It was rather hesitatingly admitted that fifteen years previously very refractory nausea and vomiting had promptly responded to the daily administration of 5 grains

(0.32 Gm) of dried thyroid gland that had been prescribed when the basal metabolic rate was found to be 27 per cent below the normal. She felt that the administration of such a wonderful drug should be continued, and it was in the same dose, for fifteen years.

It is interesting to note that the blood cholesterol content was 350 mg per hundred cubic centimeters of blood, suggesting that this condition may persist even after control of the hypothyroid symptoms. Needless to say, such patients do not respond to the administration of iodine, because the action of iodine is not on the circulating hormone but on the gland itself. Simple withdrawal of the thyroid or regulation of the dose is all that is necessary.

Just the reverse is rather infrequently seen, that is, toxic goiter ending spontaneously in hypothyroidism or myxedema. It is not always possible to obtain a history of earlier toxic symptoms, as the following case shows.

CASE 4—Mrs. D., aged 43, had been told one year previously that she had a low metabolic rate, and thyroid was prescribed. On admission to the hospital she stated that in spite of this

7 per cent and the pulse rate remained at 58. The blood cholesterol content was 136 mg per hundred cubic centimeters.

Truly, this was a mixed picture, and probably the dismissed diagnosis of disthyroidism was correct. But probably also at an earlier age the patient had had thyrotoxicosis that was not suspected and ended spontaneously in what was at least symptomatic hypothyroidism.

When hypothyroidism and postinfluenzal parkinsonism appear together, the diagnosis is frequently confusing. Changes in the motor and vegetative nervous systems are common to the two, as are also tachycardia, nervousness and loss of weight.

CASE 5—A man aged 38, had for eleven years been extremely nervous with frequent attacks of vertigo, occasional diplopia and tachycardia. He had muscular weakness, heat intolerance and an oculogyric crisis. In spite of a splendid appetite he had lost 20 pounds (9 Kg) in weight. Fourteen years previously he had had a severe influenzal infection. The physical examination revealed a bilaterally enlarged soft thyroid gland, a vaso motor flush, pulsating neck vessels and a marked coarse tremor.

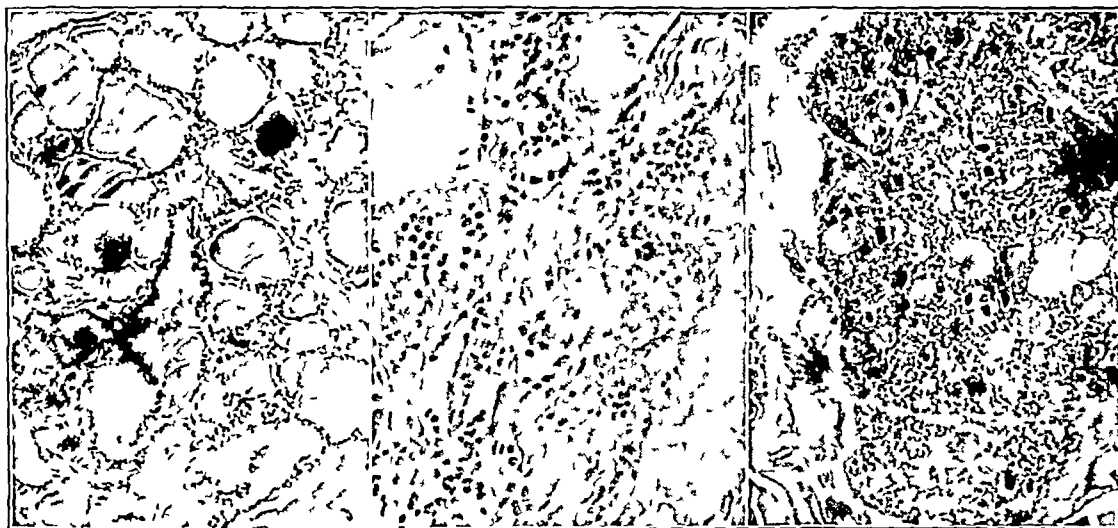


Fig. 1 (case 4)—The epithelium is cuboid save for some areas where it is still columnar. There is some papillary projection into the lumens. The stroma is increasing in some areas it is very dense and is infiltrated with lymphocytes. In some areas the structure is fetal in type.

she had become progressively more nervous and had gained weight at an amazing rate though constantly suffering from anorexia. No amount of sleep seemed to cure her exhaustion. She complained of a mass in her throat and increasing difficulty in swallowing, particularly after excitement. She was not constipated, and there was no heat intolerance but rather the hands were always cold and wet with moisture. There was no dryness of the skin or hair and no history of earlier symptoms of toxic goiter or familial goiter.

The results of the examination were unimportant except for a pulse rate of only 62 and a basal metabolic rate of minus 22 per cent. However, because of the obstructive features a subtotal thyroidectomy was decided on and the entire right lobe and isthmus and three fourths of the left lobe were removed, totaling 12 Gm in weight. No coarse nodules were seen. Microscopic examination showed a marked increase in stroma and a small amount of lymphocytic infiltration. There were numerous small nodules of thyroid tissue growth some containing papillary masses. The epithelium was chiefly cuboid or low columnar in type. The acini were small and filled with normal staining colloid, except for a few water areas infiltrated with monocytes. In a few of the masses fetal structures were seen. The impression was of partial involution of a hyperplastic and hyperactive gland. A month later the patient was free from her symptoms and, although she had taken no thyroid, the weight had been reduced from 154 to 149 pounds (70 to 67 Kg), the basal metabolic rate had increased to minus

of the fingers. There was moderate exophthalmos, with lid lag and poor convergence. There was also definite propulsion. The electrocardiogram showed preponderance of the left ventricle and simple tachycardia. The pulse rate was 100, the basal metabolic rate plus 24, the blood pressure 150 systolic, 80 diastolic and the weight 165 pounds (75 Kg).

For diagnostic purposes the patient was told to return home and take compound solution of iodine in 10 minims (0.6 cc) doses three times daily for ten days and return to the hospital for further examination. This he did and it was surprising to find a pulse rate of 120, a basal metabolic rate of plus 25 per cent and all his symptoms greatly increased. As if it had not previously occurred to him, he then ventured the information that he had been taking iodine in 20 drop doses three times daily for over two years. Again it seems to be characteristic of men particularly to withhold important clinical data. The administration of iodine was immediately discontinued and after five days rest and the use of sedatives the patient was symptom free, with a pulse rate of 60 and a blood pressure of 120 systolic, 80 diastolic and a basal metabolic rate of plus 12 per cent. I thought I was seeing my first case of iodine hyperthyroidism. He was then allowed to return home with instructions to rest, take sedatives and certainly to take no more iodine. When he returned fifteen days later all thought of iodine hyperthyroidism was dispelled. He had a return of all his symptoms, greatly exaggerated with a basal metabolic rate of plus 37 per cent, a pulse rate of 120 and a blood pressure of 160 systolic, 90 diastolic.

Seven days later a subtotal thyroidectomy was done, and the pathologic report was hyperplastic goiter with involution. Iodine was given intermittently and the administration was continued for six months, during which there was steady improvement of all the thyrotoxic symptoms. A year later the basal metabolic rate was minus 5 per cent, the pulse rate was 78, the blood pressure was 156 systolic 80 diastolic and the weight was 170 pounds (77 Kg). The patient still complained of vertigo, double vision and slight nervousness, but he was otherwise greatly improved and working daily as a civil engineer.

Before using iodine for diagnostic purposes it would seem rather important to determine whether the patient has been taking iodine, particularly as iodized salt.

Hyperthyroidism is not infrequently associated with hypertensive cardiovascular disease and, when congestive heart failure is compelling attention and there is no goiter, exophthalmos or tremor, the diagnosis is likely to be overlooked. A careful observer will find, however, that in addition to the unmistakable signs of cardiac failure there is a marked stimulation of the mental attitude, great fatigability, loss of weight and

unusual to find cutaneous diseases associated with thyrotoxicosis, although localized nodular swellings on the anterior aspects of the lower part of the legs have occasionally been reported in patients who have been operated on for exophthalmic goiter and have had a recurrence of the toxic symptoms. Histologic examination of the tissue from these nodules reveals typical myxedematous changes. The following case is illustrative.

CASE 6—Mrs. P., aged 60, had typical exophthalmic goiter which developed at the age of 25. The treatment, as well as the result, varied greatly, but when she was 42 in 1917 her condition was such that a thyroidectomy was done. Microscopic examination of the gland showed a hyperplastic thyroid. For four years afterward the health was good but in 1921 there started a series of illnesses, and by January 1932 she had had six minor operations. In July 1932, when she was 57 she began having blisters and pustules on the soles of her feet, insteps and heels. These were very pruritic. A diagnosis of ringworm was made, and the treatment consisted of various topical applications, roentgen therapy and the use of antiseptic.

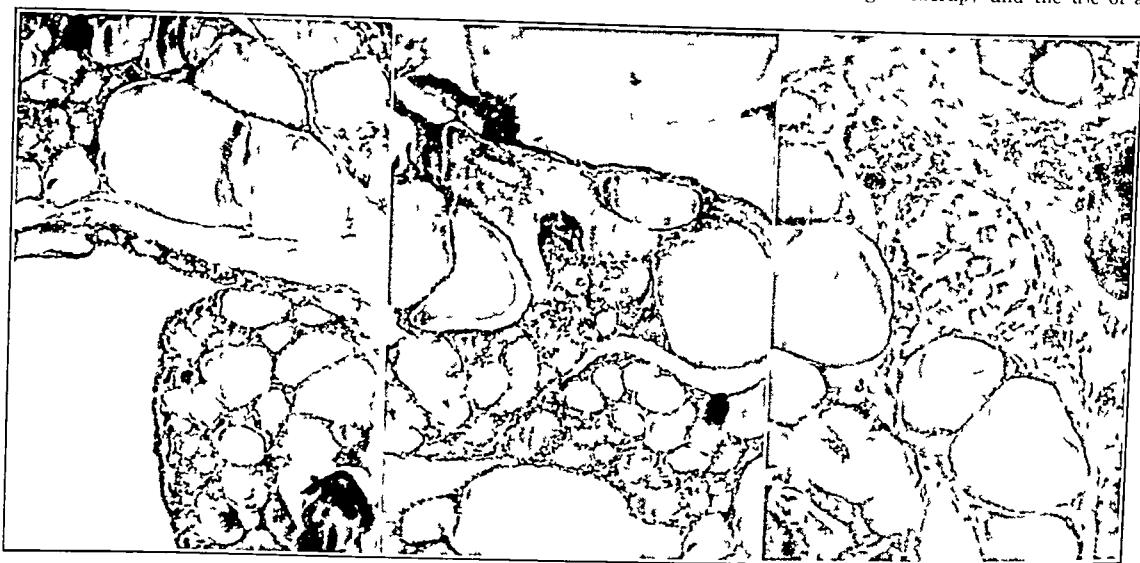


Fig. 2 (case 5)—The acini except a few are large. The lining cells are cuboid save in local areas where they are columnar. A few papillary masses project into the lumens and some of the colloid contains infiltrating monocytes. In one mass there are giant cells. There is no lymphocytic infiltration.

nervousness. It should be remembered that, next to mitral stenosis, thyroid intoxication is one of the usual causes for fibrillation. When the diastolic pressure is comparatively low, thus giving a wide pulse pressure and there is fibrillation without evidence of mitral stenosis, hyperthyroidism should be suspected. Little or no response to the administration of digitalis should arouse a strong suspicion of the presence of hyperthyroidism, and the use of iodine should be a great diagnostic help as well as a valuable therapeutic aid.

Toxic goiter, in elderly people, frequently simulates heart disease and many of the dependable diagnostic signs and symptoms are missing. If, however, there is hypertension with a wide pulse pressure and an increased pulse rate, iodine in small doses is worthy of a trial and often brings about surprisingly satisfactory results. It is, furthermore, almost axiomatic that dyspnea on exertion, tachycardia and palpitation in the absence of signs of heart failure are strongly suggestive of thyrotoxicosis.

The reactions of the skin to an increase of thyroxine in the blood, e. g., vasodilatation, flushing and sweating, are well known. While many cutaneous conditions are associated with thyroid deficiency, it is, I believe, rather

soaps. There was some improvement but the disease soon relapsed. At times it became so severe that the patient was confined to bed for as long as ten days or two weeks. She also became exceedingly nervous and was having trouble with her heart and by 1934 at the time of her examination by a dermatologist she had lost 40 pounds (18 Kg) in weight. The dermatologist's report was as follows: "There were a few nondescript scaly patches over the hands and slight pitting of a few of the finger-nails. The toe nails were very brittle, definitely cloudy and almost white on the distal half with keratotic debris beneath them. On the distal half of both soles there were pinhead to glass pinhead sized discrete pustules but no vesicles. Many pustules had involuted leaving brownish crusts. There were no lesions on the scalp, elbows or knees. Diagnosis: recalcitrant pustular eruption of the soles—a condition that is recognized as an entity."

The treatment instituted resulted in marked improvement but at no time did the condition entirely disappear. From this time on muscular weakness, nervousness, tremor and in fact all the symptoms of hyperthyroidism appeared and examination of the neck revealed two rounded nodules springing from the left lobe of the thyroid. The weight had gradually decreased. On Jan. 1, 1937, the recurrent hyperplastic thyroid tissue was removed from the left side of the trachea to which it had densely adhered. The pathologic report was "Fibrosis and chronic thyroiditis hyperplasia." The general response to the operation was unusual, but it is of interest that within seven days the lesion on the feet had cleared up entirely for the first time in nearly

five years and that up to the time of this writing there have been no signs of recurrence although no other treatment has been employed

CONCLUSIONS

What appear to be unusual aspects of hyperthyroidism depend not so much on the course of the disease itself as on unusual aspects of the aids to diagnosis. If the typical symptoms and signs are recognized and the normal metabolic rate is determined, little or no difficulty should be experienced in cases in which the rate is initially low. When the symptoms are associated with the autonomic imbalance group of nervous diseases, postinfluenzal parkinsonism and hypertensive cardiovascular disease, the use of iodine in combination with determinations of the basal metabolic rate will usually suffice to clear the diagnosis. The initial basal metabolic rate is frequently misleading and is responsible for many diagnostic errors. It is not the rate itself but rather the elevation above the patient's normal rate that is significant. Failure of the pulse rate to parallel the true basal metabolic rate should excite some doubt as to the presence of hyperthyroidism. A wide pulse pressure with hypertensive cardiovascular disease, particularly in elderly people and especially if tachycardia and auricular fibrillation are present should call attention to the thyroid. Failure of congestive heart disease to respond to medication with digitalis should arouse strong suspicion of an associated or causative thyrotoxicosis. The use of the iodine test should usually prove the presence or absence of toxic goiter.

920 Brown Building

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED

FRANKLIN C. BING, Secretary

BLAIRS BEST FLOUR SELF RISING

Manufacturer—The Blair Milling Company, Atchison, Kan.

Description—A self-rising flour containing a patent flour of red winter wheat (bleached), salt, monocalcium phosphate and sodium bicarbonate.

Manufacture—The ingredients in formula proportions are mixed in a batch mixer and automatically packed in sacks.

Analysis—Moisture 13.0%, total solids 87.0%, ash 0.4%, fat (ether extract) 1.0%, protein (N×5.7) 9.3%, sodium chloride 2.0%, monocalcium phosphate 1.8%, sodium bicarbonate (NaHCO₃) 1.5%, crude fiber 0.2%, carbohydrates other than crude fiber (by difference) 76.1%.

Calories—35 per gram, 99 per ounce

STOKELY'S BRAND STRAINED APPLE SAUCE

Manufacturer—Stokely Brothers and Company, Inc., Indianapolis

Description—Canned strained apple sauce, slightly sweetened.

Manufacture—Selected apples are washed given a spray water bath under pressure, mechanically peeled and inspected. Canned apples are used out of season. A definite amount of sugar is added. The mixture is cooked and strained in an atmosphere of steam, heated to 98 C without exposure to air and filled into enamel-lined cans, which are then sealed and processed for thirty minutes at 100 C.

Analysis (submitted by manufacturer)—Moisture 79.2%, total solids 20.8%, ash, 0.8%, sodium chloride (NaCl) 0.6%, fat (ether extract) 0.8%, protein (N×6.25) 0.2%, crude fiber 1.0%,

carbohydrates other than crude fiber (by difference) 17.5%, reducing sugar as dextrose 13.4%, sucrose 3.2%, total acidity as malic acid 0.5%, pH 3.3

Calories—0.78 per gram, 22 per ounce

Vitamins—The natural vitamin content is retained in large measure in the manufacturing process by the use of equipment and procedure which exclude air, the hot mixture is exposed only to steam.

BAY SHORE BRAND SIEVED BEEF, SIEVED LAMB AND SIEVED LIVER

Manufacturer—H. B. Bashore Products, Inc., Los Angeles

Description—(1) Canned, cooked sieved beef

(2) Canned, cooked, sieved lamb

(3) Canned, cooked, sieved liver

Manufacture—(1 and 2) Coarsely ground lean beef or lamb, U. S. inspected and passed by the Department of Agriculture, is reground, passed through a one-sixteenth inch sieve, mixed with a small quantity of water, precooked for five minutes, packed in cans, sealed and heat processed.

(3) Calf liver U. S. inspected and passed by the Department of Agriculture, is seared in hot water, ground, passed through a one-sixteenth inch sieve, mixed with a small quantity of the water in which it was seared, precooked, packed in cans and heat processed.

Analysis (submitted by manufacturer)—

	Beef per cent	Liver per cent	Lamb per cent
Moisture	81.0	78.7	70.0
Total solids	19.0	21.3	30.0
Ash	0.9	1.0	1.0
Fat (ether extract)	1.1	3.5	7.8
Protein (N×6.25)	15.5	15.0	20.3
Crude fiber	0.1	0.04	0.1
Carbohydrates other than crude fiber (by difference)	1.4	1.8	0.8

Calories—Sieved beef, 0.8 per gram, 23 per ounce

Sieved lamb, 1.6 per gram, 45 per ounce

Sieved liver, 1.0 per gram, 28 per ounce

(1) I. G. A. BRAND CRYSTAL WHITE TABLE SYRUP

(2) I. G. A. BRAND GOLDEN TABLE SYRUP

Distributor—The Independent Grocers' Alliance Distributors, Inc., New York

Packer—Colonial Molasses Company, Brooklyn

Description—(1) A table syrup, corn syrup sweetened with granulated sugar syrup, flavored with vanilla.

(2) A table syrup, corn syrup flavored with refiners' syrup.

Manufacture—(1) Corn syrup and granulated sugar syrup are mixed, flavored with vanilla, heated to 70 C and sealed in tins.

(2) Corn syrup and refiners' syrup are mixed, heated to 70 C and sealed in tins.

Analysis (submitted by manufacturer)—

	(1) per cent	(2) per cent
Moisture	24.1	24.8
Total solid	75.9	75.2
Ash	0.3	1.6
Protein (N×6.25)	0.03	0.2
Reducing sugars as dextrose	29.3	31.5
Sucrose*	9.7	6.2
Dextrins (by difference)	36.57	36.1
Titrateable acidity as HCl	0.02	0.03
Sulfur dioxide (SO ₂)	0.002	0.004
pH (50% solution)	4.7	5.6

* Determined according to the A. O. A. C. method by invertase

Calories—3 per gram, 85 per ounce

SUFFOLK BRAND EVAPORATED MILK

Distributor—Suffolk Grocery Company, Inc., Boston

Packer—Page Milk Company, Merrill, Wis.

Description—A sterilized, unsweetened, evaporated milk, the same as Page Evaporated Milk (THE JOURNAL May 30, 1931, p. 1872).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 9, 1937

DIET AND NEPHRITIS

Laboratory studies on the effects of dietary factors in nephritis have been stimulated by Masugi's¹ recent demonstration that chronic nephritis, closely resembling human Bright's disease, can be induced in laboratory animals by the intravenous injection of a properly selected organ-specific nephrotoxic serum. This work has apparently been confirmed by Smadel and Farr² at the Rockefeller Institute for Medical Research, who studied³ the effects of high protein diets on experimental chronic nephritis produced by this means in rats. These investigators studied the renal function, plasma proteins and hemoglobin of forty-eight young rats on routine laboratory diets. Severe nephritis was then produced in these rats by intravenous injection of the Masugi organ-specific antikidney serum. The animals were then divided into three groups, which were subsequently fed on three different isocaloric diets. Each diet contained 27 per cent fat (Crisco), 4 per cent salt mixture and adequate vitamins. In addition, diet 1 contained 64 per cent carbohydrate (Karo powder) plus 5 per cent protein (lactalbumin), diet 2 contained 51 per cent carbohydrate plus 18 per cent protein and diet 3 included 29 per cent carbohydrate plus 40 per cent protein.

The rate of growth of the rats on diet 1 was never as great as in rats on the intermediary or high protein diets. During the first month the course of the experimental nephritis was the same in all three dietary groups. Severe albuminuria and cylindruria appeared and persisted in all animals, anasarca was present for from a few days to several weeks, and plasma protein values were temporarily depressed. Neither blood urea nor urea clearance was significantly altered except in the single animal of each group which died during the first month from renal insufficiency.

During the second month nephritic symptoms diminished greatly or disappeared completely in all but two

of the animals on diet 1. Eight and a half months after injection of the nephrotoxic serum only one of the thirteen surviving rats on this low protein diet had urinary abnormalities. At this time five of these apparently fully recovered rats were changed to diet 3. During the ensuing two months, three of the five rats developed albuminuria with casts. Every animal fed on diet 3 from the time of injection of the nephrotoxic serum developed progressive nephritis. Only two of these animals were still alive at the end of eleven months. Both of these surviving rats were then in the terminal phase of Bright's disease. Rats fed from the time of the nephrotoxic serum injection on diet 2 had symptoms intermediate between those on diets 1 and 3.

The experiment ended at the end of eleven months. Microscopic studies of the tissues showed intense renal scarring in all rats fed on diet 3. Vascular lesions with degenerative changes were demonstrated in the hearts of most of these animals. Rats on diet 1 showed only a trace of renal damage, represented by old scarring.

From this investigation on experimental Bright's disease, Farr and Smadel conclude that in rats a "progressive chronic nephritis may follow a single toxic insult to the kidney" and that "the severity and course of the resulting nephritis is markedly influenced by diet." They recognize, however, that the experimental work was done solely on rats, with lactalbumin as the only protein variable. Whether or not other proteins are equally nephrotoxic when taken in excessive quantities has yet to be determined. The possibility of applying the Masugi technic to the production of chronic degenerative diseases of the central nervous system and other parenchymatous tissues also requires study.

PROGRESS IN INFLUENZA

In spite of the fortunate absence recently of pandemics of influenza such as the one that occurred in 1918, progress nevertheless is being made in the understanding of this disease. In December 1936, according to Stuart-Harris,¹ a rather extensive influenza epidemic afforded the opportunity for correlating the clinical events in man with the isolation of the influenza virus from patients. The principal question throughout this work was whether influenza virus infection in man constitutes a clinical entity or not. This question has been answered in the affirmative both by this author and by others. The great improvement in the ability to study the disease is derived largely from the fact that the influenza virus can produce in the ferret a short fever, with lassitude, nasal symptoms and nasal lesions, or an illness accompanied by the development of lung lesions varying in extent up to fatal pneumonic consolidation. The method of infecting ferrets, according to Andrews,² is relatively simple. The live virus from

¹ Masugi W. Beitr z path Anat u z allg Path 92:429, 1933.
² Smadel J E and Farr L E. J Exper Med 65:527, 541 (April) 1937.
³ Farr L E and Smadel J E. Proc Soc. Exper Biol & Med 36:472 (May) 1937.

¹ Stuart-Harris C H. Epidemic Influenza Brit M J 2:16 (Sept 11) 1937.
² Andrews C H. Influenza Four Years Progress Brit M J 2:513 (Sept 11) 1937.

a patient's unfiltered garglings are dropped from a pipet on a ferret's nose. When the virus is present in the inoculated material, the ferret shows fever and nasal symptoms after about forty-eight hours. Influenza in the ferret is spread by contact, and cross infections must thus be avoided by isolation.

As a rule, influenza virus will infect ferrets only when introduced directly into the respiratory tract. The pulmonary lesions, which can usually be produced only after serial passages in ferrets, are commonly bacteriologically sterile. The affected lungs are firm, moist and purplish red. Polymorphonuclear infiltration is not a feature, but patchy atelectasis is characteristic. The virus adapted to ferret lungs will infect mice, but Andrews reports varying success in attempts to adapt recently isolated human influenza strains to mice. In the latter animals, lesions only of the lungs are produced and the nasal passages are not affected. The evidence for the association of the virus with epidemics of human influenza seems convincing. The virus has been obtained from the garglings of patients with typical symptoms of influenza at times of widespread prevalence both in England and elsewhere. The serum of patients taken early in the infection has little or no power to neutralize the virus, but as early as the eighth day it will have acquired this power. A similar rise in antiviral titer does not occur in patients suffering from other respiratory diseases. An accident completed the cycle of evidence when in 1936 an infected ferret sneezed on Dr. Stuart-Harris and produced in him a typical attack of the disease.

Many other obscure facts have been uncovered by observing the disease in ferrets. Ferrets that have recovered from an attack of influenza develop potent neutralizing antibodies in their serums and are completely resistant to reinfection for about three months. After approximately six months this immunity has definitely decreased, and the animals can develop some symptoms when reinfected with high doses of the virus. The virus when given subcutaneously or by other routes, except the respiratory, is infectious only exceptionally but will produce some immunity, especially on repeated administration. It is exceedingly encouraging to note that these facts find a large measure of corroboration in the independent studies of Francis and his co-workers.³

The apparently satisfactory results of human vaccination by Francis and Magill⁴ encouraged Andrews to make a similar attempt. It was arranged through the cooperation of army authorities to vaccinate five groups, each of about 100 men, in different units, and to designate similar numbers as comparable controls. Unfortunately for the success of this attempt, an epidemic developed almost immediately and it was impossible to draw any definite conclusions other than

the fact that four persons vaccinated at least two weeks before exposure nevertheless developed clinical influenza, and from them the virus was obtained. It is thus evident that the method employed on that occasion is not 100 per cent effective.

A complicating factor has arisen from the recognition that not all strains of human influenza virus are serologically identical. Some of the differences are revealed by titrations of ferret serums, rabbit serums and cross immunity experiments. There is considerable antigenic overlap, and although the strains are more closely related to one another than to the swine influenza virus there are distinct differences. Clearly, this fact further confuses the epidemiologic and prophylactic studies, but it is to be hoped that it will not prove too great a stumbling block.

Current Comment

RELATION OF NICOTINIC ACID TO HUMAN PELLAGRA

Since the classic series of investigations on the relation of diet to pellagra begun in 1914 by Goldberger and his collaborators of the United States Public Health Service, investigators have been attempting to concentrate and purify the dietary factor concerned in the prevention of human pellagra. The progress of these studies was greatly facilitated by the work of Chittenden and Underhill.¹ These investigators, using diets similar to those associated with human pellagra, were able to produce experimental blacktongue in dogs. They demonstrated that this disease was similar to, if not identical with, human pellagra. Conditions were thus provided for assaying experimentally the various fractions obtained during efforts to concentrate and identify the antipellagra dietary factor. Highly active concentrates have been prepared by a number of investigators. Recently, workers at the University of Wisconsin, in a preliminary note,² have reported the isolation, in crystalline form, of nicotinic acid amide from active liver concentrates. The crystalline compound was found to be highly active in the cure of experimentally produced blacktongue of dogs. Furthermore, nicotinic acid, prepared from the amide, was also therapeutically effective, as was a synthetic preparation of pure nicotinic acid. A single dose of 30 mg. of nicotinic acid gave a striking response in a dog suffering from blacktongue. The appetite improved immediately, the animal showed a growth response similar to that observed on the original liver extract, the diarrhea disappeared, and on further additions of the nicotinic acid growth continued without interruption. Similar responses are reported to have been obtained in four dogs. One dog on the basal, blacktongue-producing ration, was fed 100 mg. of nicotinic acid each week for three weeks with no indication of recurring symptoms and the dog appeared normal in every way. These striking results with nicotinic acid recall the experiments of Funk in 1911,

³ Francis, Thomas Jr., Magill, T. P., Beck, M., Dorothy, and Rickard, E. R. Studies with Human Influenza Virus. *J. A. M. A.* 109: 566 (Aug. 21) 1937.

⁴ Francis, Thomas Jr. and Magill, T. P. *J. Exper. Med.* 65: 251 (Feb.) 1937.

¹ Chittenden, R. H. and Underhill, F. P. *Am. J. Physiol.* 44: 13 (Aug.) 1917.

² Elvehjem, C. A., Madden, R. J., Strong, F. M. and Wooley, D. W. *J. Am. Chem. Soc.* 59: 1767 (Sept.) 1937.

in the early period of vitamin investigation. While attempting to purify the dietary factor effective in the cure of human beriberi, Funk asserted that he had isolated the active substance in an approximately pure form.³ This material was believed to be a combination of nicotinic acid and a pyrimidine. It is interesting that Funk, a pioneer investigator in the field of vitamins, who introduced the name "beriberi vitamine," demonstrated that nicotinic acid is a constituent of the naturally occurring vitamin B complex, even though he had apparently assigned the wrong physiologic function to his compound. The phenomenal response of canine blacktongue to nicotinic acid and to nicotinic acid amide will stimulate careful investigation to determine their possible clinical value in cases of human pellagra.

THE VITAMIN CONTENT OF FOODS

A brief compendium of new information about the chemistry of the vitamins, units of measurement and tables of vitamin content of common foods has just been published by the United States Department of Agriculture.¹ This upholds the enviable reputation of the department in the laborious task of compiling data on the composition of foods. As long ago as 1895 W. O. Atwater and his associates collected data on the composition of hundreds of American food materials. This list was revised and amplified, the latest revision appearing in 1906, and today Bulletin 28 by Atwater and Bryant is known far and wide as an authoritative catalogue of the chemical composition of foods in terms of protein, fat, total carbohydrate, fiber, ash, water and fuel value. More recent workers, particularly in the Bureau of Home Economics, have collected and tabulated data covering the proximate composition and iron content of fresh fruits and vegetables. In 1929 Sybil L. Smith in the Office of Experiment Stations published a report on the vitamins in food materials but had to list most of the data in terms of plus and minus signs. In the present publication Daniel and Munsell have been able to obtain from reports in the literature quantitative information in terms of units of vitamins per hundred grams of food. The vitamin A, B₁, C, D and G content of foods is conveniently summarized in tables together with the references to the investigators who originally published the data. The bibliography lists nearly 800 citations of papers in technical and medical literature. Practically every conceivable form of food seems to have been the subject of investigation. It is curious to note, however, that the tables do not include white bread and whole wheat bread, although reports are available regarding the vitamin B₁ content of these common foods. The authors have presented a brief introductory summary of the current information on the chemical structure of the vitamins, definitions of units and discussions of methods of assay. As they have pointed out, the tables will undoubtedly need to be revised in the future so as to record the data in terms of the preferred international units, which

are based on definite standard substances, whereas Sherman units, which have been widely used and in which system most of the figures in the present work are recorded, are based on the growth response of animals. In the discussion of factors for converting Sherman or other units into approximate international units, the authors have neglected to include a common factor for converting Steenbock units of vitamin D into the international system. Most investigators have found that one Steenbock unit of vitamin D equals about 27 international units, although it is recognized that this value may vary in different laboratories. The book includes a separate table of the vitamin C (ascorbic acid) content of foods as determined by chemical titration methods and by assay methods with guinea pigs. A third table provides a brief digest of what the authors consider to be the best average values for the expected vitamin content of some 200 common foods. So many advances have been made in our knowledge of the vitamins that it is difficult even for experts to keep up with the literature. This practical handbook is indispensable for those seeking recent, authoritative information about the value of foods as sources of the vitamins.

AIR TRAFFIC AND THE SPREAD OF YELLOW FEVER

New means of communication, such as automobile roads, airplane services and new railroads, introduce new problems in the control of communicable disease. The Pan American Sanitary Bureau has been studying jungle yellow fever with the view of limiting the disease to those South American countries in which it has been proved to exist. The bureau, keeping abreast with the rapid expansion of the air travel by the lines of the Pan American Airway System, has made arrangements to prevent the international spread of yellow fever by air traffic.¹ Under the terms of the agreement, all the flying personnel of the company will be vaccinated against yellow fever. Furthermore, each passenger embarking in a Pan American Airways plane at any point north of 30 degrees south latitude will be required to fill out a form designated as "Certificate of Origin of Passenger." The questions included in this form deal chiefly with an accounting of the passenger's location for the six days preceding embarkation at the airport. This period, taken together with the time consumed on the voyage, gives a fairly wide margin of safety. In instances in which passengers have come from actually infected localities and the six day period of incubation since the last possible exposure has not been completed on arrival at destination, the passengers, according to the discretion of the quarantine officer, may be placed in open surveillance, observation or detention, as may be deemed safest and most expedient. Finally, as an additional precaution, airplanes will be fumigated during the night, when not in use. This recognition of the dangers attending the facilitation of the spread of disease by air traffic, and the noteworthy measures taken for its prevention, constitute an important chapter in epidemiology.

³ Funk, Casimir J. *J. Physiol.* **43**, 395, 1911.
¹ Daniel, Esther P. and Munsell, Hazel E. *Vitamin Content of Foods*. Miscellaneous Publication 275, U. S. Department of Agriculture, June 1937, for sale by the Superintendent of Documents, Washington, D. C. price 15 cents.

¹ Preventing the Spread of Yellow Fever Through Air Traffic. *Pub. Health Rep.* **52**, 1027 (July 30) 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

ALABAMA

Courses in Venereal Disease Control—With social security funds, the state department of health is financing a refresher course at the U S Public Health Service Venereal Disease Clinic at Hot Springs, Ark. Physicians are selected by their respective county medical societies. Only one physician is chosen from each county. The period of study is one month and the stipend is \$200 for married men and \$150 for single men, plus transportation. One course began September 1.

Personal—Dr Thomas M Towns, formerly of Clarence, has been appointed health officer of Blount County succeeding Dr Samuel D Sturkie, Oneonta, who accepted a similar position in Calhoun County.—Dr William D Burkhalter formerly of Rockford has resigned as health officer of Coosa County to become assistant director of the division of venereal disease control of the bureau of preventable diseases state department of health. He will be succeeded by Dr William H Goff, Glasgow. Both appointments were effective September 15.

ARIZONA

Dr Dunshee in Charge of Local Health Administration—Dr Jay Dee Dunshee, until recently director of public health of Idaho, has been appointed director of local health administration of Arizona according to *Arizona Public Health News*. He succeeds Dr Alvin N Cram Phoenix. Dr Dunshee formerly served among other positions as director of child welfare of Los Angeles, health officer of Pasadena and director of the state health department of California.

ARKANSAS

Meeting Dedicated to Physicians in Practice Fifty Years—The sixteenth session of the Fort Smith Clinical Society in Fort Smith, October 12, will be dedicated to those physicians in northwestern Arkansas who have been in practice for fifty years. Clinics at the Sparks Memorial Hospital will make up the program in the morning. In the afternoon Dr Laurence M Randall, Rochester, Minn. will discuss 'The Treatment of Disturbances of Genital Physiology Among Women' and Dr L A Day, Rochester, 'The Irritable Heart Syndrome and Its Accompaniments.'

CALIFORNIA

Fatal Case of Human Plague—According to *Public Health Reports* Dr Walter M Dickie, Berkeley, director of public health of California, August 30, reported a fatal case of human plague in Fresno.

Society News—Dr Albert H Rowe, Oakland, addressed the Hollywood Academy of Medicine in Hollywood September 16, on "Clinical Aspects of Chronic Allergy"—At a meeting of the Alameda County Medical Association in Oakland, September 20, the speakers were, among others Drs Lloyd E Kindall on "Traumatized Kidney and Hobart Rogers, "Protamine Insulin Shock."

Annual Secretaries' Conference—The annual joint conference of county secretaries, standing committees and officers and councilors of the California Medical Association was held in San Francisco, October 2, at the Sir Francis Drake Hotel. Dr Irvin Abell, Louisville, Ky, President-Elect American Medical Association, spoke at the afternoon session. The speakers on the program included

Dr Junius B Harris Sacramento Public Policy and Legislation
Dr Morton R Gibbons Sr San Francisco Industrial Practice
Dr George G Reinle Oakland Medical Defense
Dr Howard Morrow San Francisco Venereal Disease

COLORADO

State Medical Election—Next Meeting in Estes Park—Dr Leo W Bortree, Colorado Springs, was chosen president-elect of the Colorado State Medical Society at the annual meeting in Colorado Springs, Dr William T H Baker Pueblo, was installed as president. The revised constitution for the society, proposed in 1936 and tentatively approved at

that time by the house of delegates, was adopted. An amendment removing from the by-laws the amount of annual dues and instead giving the board of trustees power annually to fix the state dues was adopted. Approval was also given to the expansion of *Colorado Medicine* into the *Rocky Mountain Medical Journal* beginning with the January issue. The next annual meeting of the society will be held in Estes Park, with the Denver delegation acting as host in view of the fact that the profession in Estes Park is small in number and entertained as recently as three years ago.

DISTRICT OF COLUMBIA

University News—Dr Leland O W Moore, formerly of Honolulu, Hawaii, has been appointed professor of military science and tactics at George Washington University School of Medicine, Washington. The annual faculty address at the opening session of the medical school was delivered September 22 by Dr Francis R Hagner, executive officer of the department of urology, on "The Early History of the George Washington University School of Medicine."

Hospital News—The Medical Society of St Elizabeth's Hospital, Washington, was recently organized by a number of present and former members of the medical staff of the hospital. It is planned as an alumni society of the hospital to include physicians now serving, or having served in the past, at the hospital. In general it will sponsor and support efforts tending to promote the best interests of the institution, and its program will include a plan of guided psychiatric research at the hospital. Communications from former staff members, including medical officers in the military services who have been assigned to the hospital, are invited and should be addressed to the secretary Dr Jay L Hoffman, St Elizabeth's Hospital. Other officers are Drs Addison M Duval, president, and Joseph L Gilbert, vice president.

GEORGIA

Changes in Health Officers—Dr Fritz A Brink, recently of Blackshear has been appointed director of the newly created department of health in Clinch County, with headquarters in Homerville.—Dr George Marvin Anderson, Atlanta, has been appointed commissioner of health of Calhoun County effective August 15.—Dr Robert Frank Cary Dawson, health officer of Terrell County since January 1936, has resigned, effective October 1.

Surgical Conference—The Georgia section of the South-eastern Surgical Congress held its fourth annual clinical conference at Canton, September 22. Speakers included

Dr Henry W Birdsong Athens Use of Beef Bone in the Open Treatment of Fractures
Dr Fred F Rudder Fort McPherson Inguinal Hernia
Dr Enoch Callaway LaGrange Breast Tumors
Dr Stephen T Brown Atlanta Use of Sulfanilamide in Infections of the Urinary Tract
Dr George A Taylor Augusta president, state medical association Medical Societies
Dr Benjamin Russell Burke Atlanta Sinusitis Acute and Chronic
Dr Charles E Rushin Atlanta Acute Appendicitis
Dr George F Eubanks Atlanta Carcinoma of the Descending Colon
Dr Warren S Dorrough Atlanta Diastasis of Abdominal Incision

Dr Benjamin T Beasley, Atlanta, secretary of the South-eastern Surgical Congress, was also on the program.

ILLINOIS

Society News—Dr Joseph M Keller, St Louis, discussed "Disease of the Eye" before the Madison County Medical Society at its meeting in Alton, October 1.—Dr Joseph J Eller New York will address the Peoria City Medical Society October 16 on 'The Latest Methods of Treatment of Skin Conditions.' At a meeting of the society, October 5 Dr Laurence H Mayers, assistant professor of medicine, Northwestern University Medical School, Chicago, discussed "Treatment of Arthritis."

Chicago

The Belfield Lecture—Dr Dalton K Rose, assistant professor of clinical genito-urinary surgery, Washington University School of Medicine, St Louis will deliver the ninth annual William T Belfield Lecture of the Chicago Urological Society, October 21, at the Palmer House. His subject will be "Neurologic Anatomy and Physiology of the Bladder and Its Clinical Application in Urology." A dinner will be held preceding the meeting to honor Dr Rose.

Lectures on Psychoanalysis—Dr Franz G Alexander, director, Institute for Psychoanalysis, will conduct an introductory course of lectures on psychoanalysis during the first

and second quarters of the institute, beginning October 27. The course will include the following subjects:

Historical Development of the Main Concepts of Psychoanalysis
Concept of the Unconscious
The Fundamentals of Psychic Dynamics
Theory of Instincts
Theory of Dreams
Development of the Personality
General Concepts of the Structure of Neuroses and Psychoses
Principles of the Psychoanalytic Technique
Application of Psychoanalysis to Other Sciences

Beginning October 23, Dr. Leon J. Saul will present a review of psychoanalytic writings on sociological subjects. Conferences and seminars will make up the regular program for members of the Chicago Psychoanalytic Society and candidates of the institute only, with Drs. Alexander, Thomas M. French and Therese Benedek as the lecturers.

INDIANA

Deadline for Indiana Cities to Stop Lake Pollution—It was announced September 16 that Jan. 1, 1939, has been set as the deadline when the cities of Gary, Hammond, Whiting and East Chicago must have abated their contribution to the pollution of the streams in their vicinity and of Lake Michigan. The cities have the right of appeal before the state board of health. The four cities were ordered Dec. 10, 1927, to construct sewage treatment works, but little, if any, action has been made toward compliance with those orders, it was reported. The state's complaints against Gary and Hammond charge contamination of the Little Calumet River, the Grand Calumet River, the Indiana Harbor ship canal and Lake Michigan. Whiting is charged with polluting Lake Michigan, while East Chicago is accused of contaminating the lake, the ship canal and the Grand Calumet River.

KANSAS

Personal—Dr. Emery Trekel, Wellington, has been appointed health officer of Sumner County.—Dr. Marlin W. Carlson, Ellinwood, has been named health officer of Barton County.

Society News—The Pottawattamie County Medical Society will be addressed in Council Bluffs October 25 by Drs. Logan Clendening, Kansas City, Mo., on "Medical Shrines at Home and Abroad", William E. Ash, Council Bluffs, "Hypoglycemia in the Treatment of Schizophrenia," and Gerald V. Caughlan, Council Bluffs, on "Present Status of Prostatic Resection." The society was addressed September 20 by Dr. Karl A. Meyer, Chicago, among others, on "Surgical Treatment in Regional Enteritis."—The Wyandotte County Medical Society was addressed in Wyandotte, September 7, by Drs. Maurice A. Walker on "Washing Machine Injuries" and Clifford J. Mullen, Kansas City, "External Diseases of the Eye."—The Barber County Medical Society was recently organized at a meeting in Medicine Lodge. Dr. Joseph D. Warrick, Kiowa, was chosen president, and Dr. Kenneth R. Grigsby, Medicine Lodge, secretary.

MAINE

Annual Clinical Session at Portland, October 21-22—The annual clinical session of the Maine Medical Association will be held at Portland, October 21-22, at the Maine General, Children's and St. Barnabas hospitals, and at the Maine Eye and Ear Infirmary. The Cumberland Medical Society will act as host. Dr. Milton C. Winternitz, Anthony N. Brady, professor of pathology, Yale University School of Medicine, New Haven, will address the dinner session Thursday evening at the Eastland Hotel. His subject will be "The Pathology of Vascular Diseases." Special meetings during the session will include a luncheon meeting of the council of the association, October 21 and one of the county secretaries, October 22. A meeting of the advisory board of the Maine division of the Women's Field Army for the Control of Cancer is planned for Friday morning, October 22.

MARYLAND

Baltimore Opens Third Health District—The Baltimore Health Department opened the Southeastern Health District, August 16, the third of the eight health districts into which the city is being divided. With headquarters in a former school building at 901 South Kenwood Avenue, the new unit includes all of the first, second and third wards and that portion of the twenty-sixth ward south of Federal Street, embracing a population of about 100,000 persons. Dr. William H. F. Warthen, assistant commissioner of health, will have direct charge of the new health district for the next six months and will be assisted by Dr. John A. Skladowsky, the full time

district health officer. Like the Eastern Health District just to its north, the new unit will have as a cooperating agency the Babies' Milk Fund Association, which will conduct child hygiene clinics in the district building as an adjunct to the antepartum clinics of the health department. Other services for vaccination and diphtheria prevention will also be conducted for families unable to afford private medical care, according to *Baltimore Health News*.

MASSACHUSETTS

Personal—Dr. Arthur H. Davison, Boston, has been made medical director of the Boston Mutual Life Insurance Company. He has been associate director for several years.—Dr. Gaylord P. Coon, Stockbridge, has been appointed chief medical officer of the Boston Psychopathic Hospital, succeeding Dr. Jackson M. Thomas, who resigned to become associate professor of psychiatry at the University of Louisville School of Medicine, Louisville, Ky.

New Building for Tufts Medical School—Plans formulated by the alumni council of Tufts Medical Association for the erection of a new medical school building at the New England Medical Center, Boston, were approved by the trustees at a meeting, September 8, according to the *Boston Sun*. A fund of \$2,000,000 will be raised by public appeal among the alumni of the school and the people of New England, to be used for the building and endowment of various professorships and for the creation of a much needed surgical unit at the Boston Dispensary, it was stated.

MINNESOTA

Society News—Dr. John F. Norman, Crookston, was chosen president of the Northern Minnesota Medical Association at its meeting in Virginia, August 27-28. Dr. Owen W. Parker, Ely, was named vice president and Dr. Clarence Jacobson, Chisholm, secretary-treasurer. The next annual meeting will be held in Crookston.—Dr. Albert E. Meinert, Winona, was elected president of the Southern Minnesota Medical Association at a meeting, August 11. Other officers are Drs. Walter A. Fansler, Minneapolis, and Albert Fritzsche, New Ulm, vice president, and Dr. Nelson W. Barker, Rochester, secretary.—The Hennepin County Medical Society and the Minnesota Pathological Society will hold a joint meeting November 1. Dr. Arnold S. Jackson, Madison, Wis., will discuss "Errors in the Diagnosis and Treatment of Hyperthyroidism," and Dr. Eleonora T. Bell, Minneapolis, the pathologic aspects.

NEVADA

Plague Infection in Ormsby County—Under date of August 30 it was reported that plague had been demonstrated in a lot of 134 fleas collected from three ground squirrels (*Citellus beecheyi*) shot thirteen miles west of Carson City on August 20, according to *Public Health Reports*.

NEW JERSEY

Society News—The New Jersey Tuberculosis League will hold its annual meeting in New Brunswick, October 22.—Dr. Earl W. Fuller, Greystone Park, addressed the Bergen County Medical Society, Englewood, September 14, on "Mental Hygiene and the General Practitioner."

Dr. Northrop to Receive Chandler Medal—John Howard Northrop, Ph.D., member of the Rockefeller Institute for Medical Research stationed at the Princeton branch, is to receive the 1937 Chandler Medal awarded by Columbia University, New York, in recognition of his "fundamental discoveries concerning bacteria, the constitution of proteins and the chemistry of digestion." The presentation will be made October 27 during a month's celebration by the university of the one hundredth anniversary of the birth of Charles Frederick Chandler, called the "father of industrial chemistry" and New York's first public health chemist. Dr. Northrop will deliver an address on "The Chemical Nature and Mode of Formation of Pepsin, Trypsin and Bacteriophage."

NEW YORK

Mental Hygiene Commissioner Appointed—Dr. William J. Tiffany, superintendent of the Pilgrim State Hospital, Brentwood, has been appointed state commissioner of mental hygiene to succeed Dr. Frederick W. Parsons, who retired October 1. Dr. Tiffany, who is 55 years old, entered the state hospital service in 1906 and served on the staffs of the Binghamton State Hospital, Manhattan State Hospital and the Kings Park State Hospital, of which he was made superintendent in 1926.

In 1931 he was appointed head of the Pilgrim State Hospital. He was graduated from Columbia University College of Physicians and Surgeons, New York.

District Meetings—At the annual meeting of the Third District Branch of the Medical Society of the State of New York in Kingston, September 30, the speakers included Drs. Milton C. Wintermiz, New Haven, Conn., on "Pathology of Vascular Disease," Howard F. Root, Boston, and Stephen H. Curtis, Troy, "Dialogue on the Use of Protamine Zinc Insulin and Other Diabetic Problems." Dr. Charles H. Goodrich, Brooklyn, president of the state society, spoke on preventive medicine. Guest speakers at the annual meeting of the Fourth District Branch at Glens Falls, October 1-2, were Drs. Benjamin W. Carey Jr. and Paul Dudley White, Boston, on "The Use of Sulfanilamide in the Treatment of Infections of Childhood" and "The Prevention of Heart Disease" respectively. The program of the Sixth District Branch meeting in Oswego, September 21, included addresses by Drs. Irving S. Wright, New York, on "Newer Aspects of the Treatment of Peripheral Vascular Diseases," Anton W. Sohrweide Jr., Syracuse, "Diagnosis and Management of Cutaneous Cancer," and John S. Lawrence, Rochester, N. Y., "Diagnosis and Practical Measures in the Treatment of Anemia." The annual joint meeting of the Seventh District Branch of the state medical and dental societies was held in Geneva, September 22. At the morning session addresses were made by Drs. David A. Haller, Rochester, on obesity, Edward S. Rogers, Albany, pneumonia control, and Burton T. Simpson, Buffalo, etiology of cancer. In the afternoon Dr. Charles H. Goodrich, Brooklyn, president of the state medical society, Edwin I. Harrington, DDS, Watertown, president of the state dental society, and Dr. Theodor Blum, New York, discussed medicodental cooperation.

New York City

Personal—Dr. Edward H. Linnehan, Brooklyn, has been appointed director of the medical service of the United States steamship lines, which is to be expanded it is said. Dr. Simon Flexner, director emeritus of the Rockefeller Institute for Medical Research, sailed for England September 25 to spend the academic year as Eastman visiting professor at the University of Oxford. The professorship was founded by the late George Eastman of Rochester.

Society News—The Medical Society of the County of Nassau was addressed in Mineola, L. I., September 28 by Drs. Russell L. Cecil, New York, on "The Serum Treatment of Pneumonia," Edward S. Rogers, Albany, "The State Campaign Against Pneumonia," and Theodore J. Curphey, New York, "The Bacteriology of Pneumonia and the Modern Method of Typing." Dr. Theodore Neustaedter, New York, addressed the Medical Society of the County of Queens, October 1, on "Diagnosis and Treatment of Uterine Bleeding of Endocrine Origin."

OHIO

Outbreak of Typhoid with Three Deaths—The use of raw milk was responsible for a recent outbreak of typhoid in Portsmouth according to *Public Health Reports*. Since the middle of June and up to September 3 there had been sixty-eight cases in the city and twenty in Scioto County, outside the city, with three deaths. Investigation showed that 61 per cent of the cases occurred in persons supplied by a raw milk dairy which distributed only 1 per cent of the milk used in the city.

Lectures on Pathology—Dr. Herbert S. Reichle, Cleveland, is giving a series of lectures on pathology under the auspices of the Mahoning County Medical Society in Youngstown. The first was presented October 6 and the series will follow on succeeding Wednesdays until November 24. It includes three lectures on neoplasms, three on the degenerative, defensive and regenerative processes in pathology, one on the law of obstruction in pathology, and one on the phenomenon of foreign protein sensitivity.

OREGON

State Medical Meeting at Salem, October 21-23—The sixty-third annual session of the Oregon State Medical Society will be held at the Hotel Marion, Salem, October 21-23, under the presidency of Dr. Charles E. Sears, Portland. Guest speakers will include Drs. Lester R. Dragstedt, Chicago, on "Pathogenesis and Surgical Treatment of Duodenal Ulcer" and "Pathogenesis and Surgical Treatment of Acute Intestinal Obstruction," Fuller Albright, Boston, "Hyperparathyroidism," and "Medical Aspects of the Treatment of Renal Stones," and William Waldo Bauer, Chicago, director, bureau of health and

public instruction, American Medical Association, who will address the annual banquet Friday evening on "Teaching the Public About Health." Included among Oregon physicians on the program will be

Dr. Arthur C. Jones, Portland, "Technic and Dangers of Short Wave Radiotherapy,"
Dr. John E. Raaf, Portland, "Surgery of the Sympathetic Nervous System for Essential Hypertension,"
Dr. Roy C. McDaniel, Portland, "The Injection Treatment of Hernia: What Are Its Complications and the Destiny of the Sac?"
Dr. Vern W. Miller, Salem, "Aplastic Anemia Due to Sensitivity to Benzamine Derivatives,"
Dr. Matthew C. Riddle, Portland, "Factors Affecting Blood Regeneration,"
Dr. Adolph Weinzirl, Portland, "Public Health Aspects of Rabies with Particular Respect to Its Control,"
Dr. Charles P. Wilson, Portland, "The Tachycardias: Their Recognition and Treatment."

A symposium on public health activities authorized by the social security act will be held Thursday night by the following members of the state board of health: Dr. George D. Carlyle Thompson, director of maternal health, Floyd H. DeCamp, DDS, director of oral health, Dr. August E. Bostrom, director of county health units, and Dr. Frederick D. Stricker, state health officer.

PENNSYLVANIA

Society News—Dr. Roy R. Snowden, Pittsburgh, addressed the Beaver County Medical Society, September 9, at the Beaver County Sanatorium, Monaca, on nephritis. Dr. Harold W. Jones, Philadelphia, addressed the Lehigh County Medical Society, Allentown, September 14, on blood dyscrasias. At the annual meeting of the Association of Surgeons of the Pennsylvania Railroad at the Hotel William Penn, Pittsburgh, October 1-2, out of state speakers included Drs. Ralph G. Carothers, Cincinnati, on "Treatment of Fractures of Neck of Femur by Internal Fixation," Fred H. Albee, New York, "Surgical Reconstruction of the Lever at the Top of the Femur and Its Importance," Frank Warner, Columbus, Ohio, "The Hospitals and Diseases of South America," and Benjamin I. Golden, Elkins, W. Va., "Hernia Technic." Dr. Frederick A. Bothe, Philadelphia, addressed the Northampton County Medical Society, Easton, September 24, on "Surgery in the Diabetic Patient." Dr. I. Hope Alexander, Pittsburgh, discussed "Public Health" before the McKeesport Academy of Medicine at its meeting in McKeesport, September 27. Dr. William H. Stoner, Tuckahoe, N. Y., addressed the Lycoming County Medical Society, September 10, on "Recent Therapeutic Advances."

TENNESSEE

Personal—A group representing medicine and dentistry in Nashville attended a dinner at the invitation of Dr. John J. Mullaney, president of Meharry Medical College, in honor of Dr. Edward Lewis Turner, head of the department of internal medicine, September 2. Dr. Turner was formerly professor of internal medicine at the American University in Beirut, Syria.

TEXAS

Personal—Evan W. McChesney, Ph.D., associate professor of biologic chemistry at the University of North Carolina School of Medicine, Chapel Hill, has been appointed to the faculty of the Baylor University School of Medicine, Dallas. Dr. Clarence Burke Brewster, Fort Worth, has resigned as health officer of Tarrant County to become school physician for Fort Worth. Dr. Charles W. Butler Jr., Crockett, has been appointed a member of the state prison board. Dr. William M. Dickens, Greenville, has been appointed to the state board of health to succeed the late Dr. Samuel A. Woodward, Fort Worth.

Society News—The Texas Association of Gynecologists and Obstetricians will meet jointly with the Central Association of Obstetricians and Gynecologists at the annual meeting of the latter in Dallas, October 14-16. The Texas group will have as its guest Dr. John A. Kolmer, Philadelphia, who will speak on "Syphilis Complicating Pregnancy" and "Treatment of Septicemia with Reference to Sulfanilamide." Dr. Charles M. Campbell, Boston, will be the guest of the Central association. His subject will be "Personal and Environmental Factors in Obstetrical and Gynecological Practice." Drs. Julius McIver and Samuel A. Shelburne, Dallas, addressed the Gray-Wheeler Counties Medical Society, Wheeler, August 17, on "Mechanism of Labor" and "The Use of Digitalis in Certain Diuretics and the Management of Cardiac Decompensation" respectively. Dr. Ozro T. Woods, Dallas, addressed the Angelina County Medical Society, Lufkin, September 9, on "Treatment of Tumors of the Breast."

WISCONSIN

Society News—At a meeting of the Eleventh Councilor District Medical Society in Mellen, August 7, Dr Stephen E Gavin, Fond du Lac, then president of the State Medical Society of Wisconsin, made an address on "Legislation Affecting the Practice of Medicine in Wisconsin." On the scientific program were Drs John R Goodfellow, Superior, on "Rest in Psychopathic Cases" and James C Sargent, Milwaukee, "Transurethral Resection A Milestone in Surgery of the Bladder and Prostate"—Dr Byrl R Kirklin, Rochester, Minn, addressed the Rock County Medical Society, Beloit, recently on "Roentgenologic Examination of the Alimentary Tract and Indications Therefor."

Study of Accident Prevention—A special survey designed to achieve more effective methods of accident prevention is now being carried on in Wisconsin under the direction of Dr Carl J Kornreich, special federal agent, department of vital statistics, bureau of the census, Washington, D C, according to the bulletin of the state board of health. Recent accident fatalities will be studied and more complete information than is contained in the death certificates on file at the state bureau of vital statistics will be gathered. A similar study was conducted in Baltimore, it was stated, but Maryland's rural population was considered too small to complete a typical state picture. Special attention is being given to automobile and home accidents in the hope of developing more successful prevention programs, but all types of accidents will figure in the survey, it was reported.

GENERAL

New Bulletin on Radiology—The Bulletin of the Inter-Society Committee for Radiology, the recently organized representative body for the American Roentgen Ray Society, Radiological Society of North America, American Radium Society and the American College of Radiology, made its first appearance with the August issue.

Annual Meeting of Dietetic Association—The twentieth annual meeting of the American Dietetic Association will be held in Richmond, Va, October 17-23. The preliminary program announces a symposium on pellagra with the following speakers: Dr William H Sebrell Jr, U S Public Health Service, William J Dann, Ph D, and Dr David T Smith, Durham, N C, and Dr Tom D Spies, Cincinnati. Among other speakers will be Elmer V McCollum, Ph D, Baltimore, on "Recent Developments in the Field of Nutrition", Dr James S McLester, Birmingham, Ala, "The More Abundant Diet," and Dr Warren T Vaughan, Richmond, "Newer Developments in the Treatment of Food Allergy."

American Academy of Dermatology and Syphilology—A special committee appointed at the meeting of the Section on Dermatology and Syphilology of the American Medical Association in Atlantic City in June held a meeting in Chicago September 10 and voted to organize the American Academy of Dermatology and Syphilology. The original committee of seven was enlarged to seventeen members, as follows: Drs Harold N Cole, Cleveland, Oliver S Ormsby and William A Pusey, Chicago, Clarence Guy Lane, Boston, Howard Morrow, San Francisco, Paul A O'Leary, Rochester, Minn, Elmore B Tauber, Cincinnati, Frederick D Weidman, Philadelphia, Udo J Wile, Ann Arbor, Mich, George M MacKee, Howard Fox and Fred Wise, New York, Harry R Foerster, Milwaukee, Earl D Osborne, Buffalo, Harry J Templeton, Oakland, Calif, Martin T Van Studdiford, New Orleans, and Richard S Weiss, St Louis.

Epidemiology of Venereal Lymphogranuloma—Dr Sven Hellerstrom, S t Goran's sjukhus, Stockholm (Sweden), is undertaking a world wide study of the incidence of venereal lymphogranuloma. He is anxious to receive from individual physicians statements as to the number of cases of venereal lymphogranuloma which they have seen personally, including only those in whom Frei's intracutaneous reaction has been carried out. It is wished also to show a record of the distribution of the cases by months during the year, sex and age incidence, the duration of the period of incubation, classification of various forms of the disease, a record of extragenital primary disorders, a statement as to the part of the world in which the patient became infected, and also a note as to cases complicating other venereal diseases, mortality records, and also instances of esthiomene (chronic ulcer of the vulva and anorectal syphiloma) due to venereal lymphogranuloma.

Society News—Dr Harvey Bartle Philadelphia, was elected president of the American Association of Railway Surgeons at its annual meeting in Chicago September 22. Drs

James Frank Dinnen, Cleveland, John G Hayden, Kansas City, Mo, and Willis C Campbell, Memphis, Tenn, were chosen vice presidents and Dr Daniel B Moss, Chicago, was reelected secretary.—Dr George Harvey Agnew, Toronto, was chosen president-elect of the American Hospital Association at the annual meeting in Atlantic City, September 13-17. Mr Robert E Neff, administrator of the University of Iowa Hospital Iowa City, was installed as president. Dr Robin C Buerki, Madison, Wis, was made president of the American College of Hospital Administrators, which met at the same time.—The National Society for the Prevention of Blindness held its annual meeting October 6 at the Hotel Pennsylvania, New York. Dr William F Snow, New York, managing director American Social Hygiene Association, delivered an address on "Saving Sight Through Public Action".—Dr Ladislaus J Dancelski, Gary, was elected president of the Polish Medical and Dental Association of America at its annual convention in Boston, August 26-28.—The annual National Hearing Week, sponsored by the American Society for the Hard of Hearing, will be observed October 24-30.

Annual Report of Rockefeller Foundation—According to the annual report of the Rockefeller Foundation, \$1,623,750 was expended in 1936 for projects in the medical sciences. Of this sum \$702,050 was disbursed for research in psychiatry and allied subjects, \$112,000 for the teaching of preventive medicine and public health, \$130,000 for fellowships, \$110,000 for small grants in aid, and \$569,700 to projects of the former program, principally to the China Medical Board Inc, for maintenance of the Peiping Union Medical College. In donating \$11,300,000 during 1936 in connection with its world wide program the foundation cooperated financially with 130 agencies, including forty-one local and national governments, forty-four educational institutions, two libraries and twenty-three councils, associations, societies and commissions, most of them national or international in scope. The foundation's activities were carried on in fifty-three foreign countries, with the disbursements in this field totaling \$3,621,000 or about one third of the total expenditures of the year. The work of the International Health Division of the Rockefeller Foundation in 1936 was conducted on a budget of \$2,100,000 in thirty states of the United States and in forty-one foreign countries. The major portion of the budget went to laboratory and field services and to the control and investigation of specific diseases. About one fourth of the amount was devoted to public health education and to the aid of state and local governments in setting up model health centers and demonstrations.

The aid given in psychiatry has been of various types covering different avenues of approach to the general problem. In 1936 appropriations were made for the development of a number of psychiatric clinics and university departments of psychiatry or neurology, for the general diffusion of information on psychiatry and the improvement of psychiatry and neurology, studies in child psychiatry and delinquency, for studies of viruses affecting the nervous system especially the virus of poliomyelitis, for studies of the role played by inheritance in the causation of mental disease and defect, and for studies of conditioned reflexes and the interrelation of emotional and mental states with physical diseases and disabilities.

Seventy-seven fellowships in the medical sciences were administered directly by the foundation during 1936, twenty-six of these were granted from General Education Board funds under a joint program. The fellowships of the Rockefeller Foundation went to citizens in twenty-two countries, while all of those of the General Education Board were held by citizens of the United States.

Of the \$110,000 set aside for the grants in aid in medical sciences in 1936, \$109,191.80 was distributed in fifty separate grants, the largest of which was \$6,000 and the smallest \$150. The grants were practically all in the field of neurology and psychiatry, or other subjects as they related to neurology or psychiatry.

During the year the foundation granted small sums from a general fund available to all divisions to the Medical College of Virginia, Tufts College Medical School and the University of Bern, Switzerland to enable each of these institutions to establish on its staff a European scholar who for political reasons, was not able to continue his research and teaching in his former post. A final contribution of \$150,000 was given to the committee on drug addiction of the National Research Council, which the foundation has been assisting since 1931. Carried on chiefly in the Universities of Virginia and Michigan, it is likely that the committee's work when completed, will represent one of the most exhaustive studies of narcotics and drug addiction as yet undertaken, the report states. The U S Public Health Service is cooperating.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 11, 1937

Menopausal Arthritis

The existence of menopausal arthritis is not generally recognized. But in a presidential address to the Yorkshire Branch of the British Medical Association, Dr Geoffrey Holmes declares that through twenty years of special practice he has become familiar with it and he has been selected by the editor of the British Encyclopedia of Practical Medicine, Sir Humphry Rolleston, to write the article on this subject. Dr Collins, rheumatism research fellow of Leeds University, informed Holmes that in a four months tour of the principal rheumatism clinics in America last year he never heard menopausal arthritis mentioned. Dr Holmes limits the term 'menopausal arthritis' to arthritis beginning within the five or six years preceding or following the cessation of menstruation. The onset is insidious, at first there is little inconvenience, and medical advice is not sought until the occurrence of a sudden exacerbation of pains in the knees or hands, the joints most commonly affected. Painful swelling of the terminal joints of the fingers may cause the patient to fear the onset of rheumatoid arthritis, and the distinction is important. These patients do not look toxic or anemic or otherwise ill. The knees are almost invariably affected, causing discomfort in rising from low chairs and in standing or walking for long periods, particularly in going downhill or downstairs.

In the early stages the joint signs are exactly like those of other forms of chronic synovitis. Palpation will show that the synovial membrane on the inner side of the knee is thickened and tender. Flexion and extension of the knee give a sensation to the hand over the knee cap of soft velvety crunching. There is seldom sufficient fluid to cause riding of the patella, but the knee is enlarged. The joint is not hot. X-ray examination in the early stage does not show any bony changes or increased density of the surrounding tissues. Later bony spicules appear and still later pipping and loose bodies. The changes are then indistinguishable from those of ordinary hypertrophic arthritis and with early treatment should not be reached. The appearance of the hands also is characteristic. The wrists may be affected, but usually the joints picked out are the carpometacarpal joints of the thumbs and the terminal finger joints. The periarticular infiltration gives a somewhat elastic feeling. There may be signs of thyroid deficiency, ranging from small localized patches to well defined myxedema, brittle hair on the scalp, thinning or absence of the outer half of the eyebrows and dry harsh skin.

The most important diagnostic point is not to mistake these menopausal enlargements of the terminal finger joints for rheumatoid arthritis, in which there is usually symmetrical spindle shaped swelling of the proximal joints with muscle wasting, especially of the interossei and often trophic changes of the nails. The fingers are usually blue or very pale and cold, and the palms often wet with clammy sweat. In rheumatoid arthritis, X-ray examination shows rarefaction and narrowing of the joint slits comparatively early.

The treatment requires complete investigation of the patient. Infection, trauma and endocrine deficiency are the main causative agents of arthritis, and of these infection plays a less and trauma and endocrine deficiency a greater part in menopausal than in atrophic arthritis. Though the patient's appearance does not suggest infection, focal infection may coexist. Obvious septic foci, such as decayed teeth, should be removed. Constipation should be treated. In overweight patients, reduction of carbohydrates or of total food is usually beneficial. Vitamins B and D with, if necessary, a calcium salt may be given. As trauma plays a part, flatfoot or valgus in heavy persons

should be treated. Kneeling should be avoided. A daily hot bath, in which the patient should massage her joints, is helpful. Thyroid is indicated when signs of myxedema occur. Estrogen may be useful. Massage will aid in the removal of patches of fibrositis. Steam baths to the arms and legs, followed by massage, are particularly helpful.

The Prevention of Blindness

In a circular issued by the Ministry of Health to county councils and local health authorities, attention is drawn to the report on the prevention of blindness by the standing committee of the Union of Counties Associations for the Blind. The committee emphasized the importance of adequate antepartum supervision stressing the need for expert ophthalmoscopy in cases of failure of reading sight during pregnancy. It insisted on the proper cleansing of babies' eyes at birth and recommended a 1 per cent solution of silver nitrate as the most efficient prophylactic, though its use need not be routine. The committee held that ophthalmia neonatorum could best be treated in the hospital and that an ophthalmic surgeon should be made available at all hospitals where it was treated.

With regard to children under school age, the committee noted the success of the system of medical examination. The arrangement whereby some local authorities utilize the services of the school clinics and of the ophthalmic surgeon attending these for the examination of children under school age was thought economical and capable of expansion. The committee also recommended that the treatment of external eye conditions and the minor ailments of children of school age should be made available for children under school age and suggested that a critical survey by the health officer of the arrangements for the early diagnosis and treatment of serious eye defects in such children might be fruitful. With regard to children of and over school age, attention is drawn to the ophthalmic services provided by the local health authorities for children of school age as described in the report of the chief medical officer of the board of education on the health of the school child, in which it is recommended that school medical officers should examine children's vision as soon as possible after their entry into the school. Attention is also drawn to the possibility of serious eye trouble resulting from certain infectious diseases, especially measles.

Research on Trypanosomiasis

The problem of trypanosomiasis in Nigeria and Tanganyika is exercising the government, which has made a grant of \$95,000 a year for five years to deal with the disease in the former colony and one of \$58,000 in the latter. In Nigeria the disease is causing not only depopulation on a distressing scale but also a decline of the efficiency of the remaining population in the affected areas. A scheme has been devised to cover not only mass surveys and the treatment of nearly 100,000 people a year but also clearing and resettlement of the population in tsetse-free areas. The report pays a tribute to the research work of Dr J. F. Corson on *Trypanosoma rhodesiense* at Tinde, Tanganyika, which has been in progress for some years. It raises the immediate issue of the relation of human trypanosomiasis to the disease in domestic animals in a wild state and the part they may play as reservoirs of the infection. In the course of experiments directed toward establishing the transmission of trypanosome strains through animals to man, Dr Corson, his assistant Mr H. C. Smith of the veterinary department and an African assistant exposed themselves to inoculation from infected animals. As a result, Dr Corson and the African assistant acquired trypanosomiasis, thus showing that the trypanosome strain had not lost the power to infect man through a lengthy stay in the bodies of animals. This research is held likely to benefit not only Tanganyika, where the disease is a great obstacle to the development of large areas of the country, but also other parts of the empire.

PARIS

(From Our Regular Correspondent)

Sept 11, 1937

Free Hospital Service and Votes for Politicians

There is a constantly growing wave of complaint against the extension of free hospital care to those well able to pay for it. At first this abuse was chiefly confined to the larger cities of France, but there is abundant evidence to show that it is assuming huge proportions in villages. Quite often well-to-do patients are sent to the nearest public hospitals as free patients by the mayors or aldermen of smaller communities in order to obtain votes at subsequent elections. A number of examples of such abuses have recently been published in the *Concours medical*, which journal advises practitioners to file protests through their local societies. Until recently, only medical men in larger cities were affected and the country practitioner thought himself immune, but it is now his turn to feel the inroads on his income by this wave of socialization of medicine in France, which has reached alarming proportions.

Annual Meeting of International Medical Days

As in all previous sessions of this International Medical Days, the annual meeting was held June 26-30 in Paris with Professor Carnot as president. The general subject of this congress was *hormonic regulations*. The introductory paper was by Prof. G. Roussy, dean of the Paris Medical School, who said that the neuro-endocrine system exercises its action on the neurovegetative centers through four mechanisms, as follows: 1. A direct nervous mechanism, by which certain impulses are sent directly by the neurovegetative system to the organs that execute them. 2. A direct hormonal mechanism in which the hormonal principles, having entered the general circulation, act without an intermediary. 3. A central neuro-hormonal mechanism, by which the neurovegetative system acts indirectly on the organs which carry out the action by promoting the elaboration of the hormonal principles. 4. A central hormononeural mechanism in which the endocrine glands act indirectly on the organs by stimulating the function of individual neurovegetative centers.

Professor Mauriac of Bordeaux called attention to the number of unknown factors that still exist in endocrinology and how difficult it is to apply clinically the results of experimental research. Nevertheless the treatment of diabetes mellitus and diabetes insipidus, pernicious anemia and Addison's disease has made great progress. Endocrinology has furnished much valuable information on acromegaly and von Recklinghausen's disease. Perhaps psychic disturbances will be found to be due to endocrine dysfunction. In many clinical cases it is difficult to say which endocrine gland is involved and our notion of pluriglandular syndromes is evidence of our lack of knowledge from a clinical standpoint.

Edgar Allen of New Haven, Conn., showed how the estrual cycle of the lower mammalia and the menstrual cycle of primates can be reproduced in ovariectomized animals by means of pure crystallized hormones, natural or synthetic. An injection of estrogen is followed by hyperplasia of the genital epithelium. The estrual cycle in animals is a succession of growth and regression phases under the influence of estrogen and can take place even in the absence of ovulation and corpus luteum formation. Estrogen is essential to menstruation and the corpus luteum hormone, progesterone, is of secondary importance, nevertheless the development of a premenstrual state in the endometrium necessitates the action of both estrogen and progesterone.

P. E. Smith of New York pointed out the difficulty of determining the number of hypophyseal hormones. There is a striking contrast between the number, at present eight, of alleged different principles and the small number of cells, of which

only the acidophile and basophile appear to be secreting cells. All these hormones are not to be considered definite chemical entities, as they have as yet not been isolated in a pure state.

Alexis Carrel of New York described the culture method for viscera in the Lindbergh apparatus. An organ or anatomic region is transplanted in an aseptic manner and its nutrition maintained by means of a liquid injected into the main artery. The underlying principle differs from that of ordinary culture of cells, as independent units, in being a culture of constituent organ units of the body. The objective is to observe the influence of surrounding physical conditions and the composition of the circulating medium on the structural and functional activity of the organs, hence it is particularly applicable to the endocrine glands. The distinguishing feature of the Lindbergh apparatus as opposed to classic perfusion methods is the long duration of the experiment, up to a month, and the avoidance of infection. It is possible to avoid embolism and necrosis. The physical and chemical properties of the circulating medium were given. Circulation of the liquid and its chemical composition can be regulated at will. Certain glands which, like the kidney and testis, require a great deal of oxygen, degenerate rapidly.

Drs. Houssay and Biasotti of Buenos Aires stated that the hypophysis has a regulatory influence on the majority of metabolic phenomena, such as the specific dynamic action of the proteins, regulation of salt and water metabolism and the metabolism of proteins, fats and carbohydrates. They emphasized the action of the hypophysis on carbohydrate metabolism and especially of the diabetogenic hormone, which acts directly without intermediation of the pancreas.

Dr. L. Ruzicka of Zurich, Switzerland, stated that his chemical studies of various hormones, especially the androgens, had shown that they were all derived from cholesterol and that a close relation existed between so-called sex hormones and vitamins.

Ancel of Strasbourg demonstrated the action of the sex hormones in sexual development during embryonic life in the higher vertebrates. These substances may not only act on the secondary sexual characteristics but regulate the development of the genital ducts and determine the sex of the gonad. The difference in chromosomal constitution of the gonocytes in the two sexes may in a measure be overcome by excess estrogen or androgen. Intersexuality may be determined by the simultaneous secretion of both estrogen and androgen in an organism genetically male and female or possibly by the secretion of an intermediary hormone.

Von Euler of Stockholm called attention to the relations existing between hormones and vitamins. There appears to be no sharp line of demarcation between these substances. Just as vitamins can be synthesized in animals from provitamins of vegetable origin, so the hormones can be synthesized from pro-hormones of vegetable origin.

The conclusions, from a clinical standpoint, to be drawn from all the papers on hormones were the subject of discussion by Professors Loeper and Harvier of Paris. The former indicated the important interrelations of the glands of internal secretion. Instead of the terms "hypofunction" or "hyperfunction," that of "dysfunction" is to be preferred in many cases. The importance of neurohormonal relations was strongly emphasized. The prominent part played by glandular inter-reactions may make it very difficult to make a diagnosis of hormonal insufficiency. The hormonal tests themselves quite often point to an involvement of several rather than of a single gland.

Professor Harvier said that it is necessary to employ estrogens cautiously on account of their potential cancer-producing properties. Endocrine therapy is still a mysterious field and there are still many unknown elements in it.

Recent Legislation on Industrial Diseases

An outline of the work thus far accomplished by the International Bureau of Labor, with headquarters at Geneva, appears in the August 25 issue of the *Presse medicale* by Prof. L. Crozzi, head of the industrial hygiene section of the bureau. In the study of the relation between labor and the worker, the bureau has devoted attention to (a) the coordination of the tasks demanded to the aptitudes of the individual, (b) how the environment can be improved so that the maximum result is obtained without an excessive expenditure of muscular force, (c) daily and weekly duration of work, rest periods and annual vacations, (d) the investigation of how best to arrange the meals taken during a working day, and (e) adaptation of the worker to the machine and vice versa. The standards of hygiene established in 1928 have been favorably received by employers and workers in a number of countries, especially those studies which take up the question of lighting in factories, color tests and hygiene in mines. Prohibition of the use of white phosphorus in the manufacture of matches has been adopted by thirty-four countries, yet there are great risks of phosphorism and its compounds for workers in making fireworks in countries that have not adopted these precautions. Lead poisoning is another subject which has received a great deal of study by the bureau, also prevention of anthrax from wool and hides containing the spores of this type of infection, and cancer in aniline workers. The bureau issues a bibliography every three months, which contains 3000 references annually. Another problem taken up by the bureau is compensation for occupational diseases. In 1925 there were only two intoxications, lead and mercury, and one infection, anthrax, that should be compensated. Since 1934 the list has included also silicosis, intoxications by benzene and its derivatives, phosphorus, arsenic, nitro and amine derivatives, halogen derivatives of the hydrocarbons, effects of radium, radioactive substance and x-ray effects, and finally primary cancers of the skin.

Pulmonary Embolism

A report of a six year experimental study of pulmonary embolism in general and that following operations or deliveries in particular was presented by Dr. Pierre Bardin at the June 23 meeting of the Academie de chirurgie of Paris. It has been customary to say that a sudden death corresponded to a massive embolism, that subacute symptoms indicated an embolus of medium size, and that in patients presenting only hemoptyses the emboli were minute. It is evident in view of recent experimental research that such a division is inadequate. The essential in the study of pulmonary embolism is to know the mechanism of these accidents and to attack the problem in its anatomic-clinical and physiologic aspects.

Bardin distinguishes four principal clinical forms or groups, thus:

Group 1 Sudden death from syncope. This is much rarer than has been generally believed and there has been too much of a tendency to ascribe every sudden death after operative intervention to pulmonary embolism. Would it not be more correct to say that the patients succumb in reality to disturbances of the nervous system, heart, liver, kidneys or adrenals? The sudden occurrence alone does not justify making a diagnosis of embolism.

Group 2 In this group, death takes place in four or five minutes, the principal clinical symptom being anxiety. The patient complains of a severe pain in the chest but is especially overwhelmed by the impression of impending death. The face is pale but not cyanosed. The breathing is shallow but there is no asphyxia. The clinical picture is more like that of angina pectoris.

Group 3 The principal clinical feature is asphyxia. The course is much slower than in the preceding form and death takes place at the end of half an hour, one hour or longer. The patient is cyanosed and the dyspnea is marked. The exam-

ination of the lung and the evolution of the clinical picture resemble those of acute pulmonary edema. This is the variety which has been described by Trendelenburg and also by the majority of surgeons who have attempted embolectomy.

Group 4 In this group the patient dies in a few hours, the symptoms being those of cardiovascular collapse.

Even if there are cases in which a clot was found in the pulmonary artery, which could, however, not always be proved to have originated in a femoral or iliac vein, there are others in which necropsy reveals only a minute clot in a pulmonary artery of small caliber. According to Bardin it is not so much the vascular occlusion that gives rise to the serious symptoms as it is the reflex nerve disturbances due to the presence of the embolism. An experimental study of the entire question was undertaken by Bardin, by introducing minute pearl-like pieces of enamel, paraffin and pumice stone into the venous circulation of dogs. Sudden death followed only the use of minute artificial emboli, and hence it would appear that it is not massive occlusion but a reflex of pulmonary origin, caused by the action of the embolizing particles on the nerve endings in the pulmonary arteries, that gives rise to the clinical syndrome. Later an effort was made to modify the postembolic reactions in rabbits, which are the animals to be preferred for this experimental work. When the left vagus alone is sectioned, three times as many of the artificial emboli are necessary to cause sudden death. This rises to seven times the quantity when both vagi are cut. Inversely, division of the two cervical sympathetic trunks necessitates the use of only one-fourth of the quantity. In dogs and rabbits, Bardin and Delarue, by section or by chemical or mechanical irritation either of the vagus or of the trunk or ganglions of the sympathetic, have been able to reproduce pulmonary changes such as congestion, hemorrhage or edema, diffuse or localized, similar to those seen following pulmonary embolism. Bardin is of the opinion that the clinical syndromes of pulmonary embolism are not the result of a mechanical occlusion but that the embolus provokes a true reflex, beginning in the arteriole with formation of an infarct and reflex action primarily on the respiratory and then on the cardiac centers. The author was skeptical as to the results of the Trendelenburg operation of embolectomy. In the subacute and hyperacute forms, atropine sulfate and morphine hydrochloride should be given immediately. In the syncopal form with arrest of respiration, artificial respiration and, if needed, intracardiac injection of epinephrine should be associated. In the acute pulmonary edema form, ample bleeding and ouabain by the intravenous route appear logical. In the fourth, or cardiovascular collapse, type, atropine and epinephrine are indicated. His observations on dogs have shown that by giving atropine, ephedrine and sodium bicarbonate before operations, it is possible to prevent postoperative embolism. This work still requires a great deal of clinical application in order to corroborate it.

Death Following Use of Iodized Oil

At the April 29 meeting of the Societe de neurologie a case of compression of the cervical portion of the spinal cord was reported by Drs. Alajouanine and Horner in which cerebral and diffuse vasomotor dysfunction symptoms and a rise of temperature to 108.6 F and a fatal termination followed a subarachnoid injection of iodized poppy-seed oil. The neoplasm, a fibrosarcoma, seated at the level of the seventh cervical vertebra, had given rise to a transverse myelitis with marked local circulatory disturbance and a diffuse edema of the cerebral meninges, of the floor of the third ventricle, predominantly. The authors did not wish, in reporting the case, to discredit the Sicard method of diagnosing spinal cord lesions but simply to call attention to the fact that every lumbar puncture, in acute cervical medullary lesions with compression, is apt to be followed by death at some stage of the disease. They compared the vasomotor dysfunction and hyperthermia observed

in their case to the pallor-hyperthermia syndrome recently reported here as following operation in younger persons. In such cases the authors have found an edema, predominantly at the level of the floor of the third ventricle, where the vasomotor and heat regulatory centers are located. The discussion following the reading of this paper was a very active one.

Dr Baudouin was of the opinion that the use of iodized oil was without any danger in the majority of cases but that accidents are seen from time to time. Suboccipital puncture, even when iodized oil is not used, is not without its dangers, but lumbar puncture is less apt to be followed by complications. Dr Alajouanine believed that there were special reasons in his case why the injection had been followed by death. Even a simple decompression by lumbar puncture might have been fatal. Iodized oil is not very well tolerated in cases of non-tuberculous or tuberculous spinal cord compression.

Dr Mollaret asked why it would not be advisable to inject the oil at a much lower level and then place the patient in a horizontal position, so as to allow the solution to keep away from the tumor.

Dr Alajouanine replied that every procedure would be dangerous in such cases as he had reported.

Dr Chavany had observed accidents following injection of iodized oil in Dr Clovis Vincent's service. He preferred using it just before operation.

International Rheumatology Meeting

The 'International Rheumatology Day' organized by the French League Against Rheumatism will hold its meeting October 9 in Paris. The president is Professor Laignel-Levastine and the subject for general discussion is "Radioactive Preparations in Rheumatology." A clinical session at the Hôpital St Antoine will take place in the service of Professor Loeper, and in the afternoon papers will be read on Radioactive Medication by Dr Coste, on Artificial Emanotherapy by Drs Cluzet and Thiers, and on Emanotherapy in Thermal Cures by Drs Piery, Milhaud, Euziere and Castagne.

BERLIN

(From Our Regular Correspondent)

Sept 2, 1937

Developments in the Public Health Service

Several interesting reports were submitted to the recent national convention of the public health service physicians. The minister of the interior discussed the objectives and programs of the German public health service, as well as public health problems in general. The supreme function of public health service, he said, is the promulgation of policies consistent with the eugenic progress of the nation. The increase in the number of births from 993,126 in 1932 to around 1,290,000 in 1936 he hailed as a first victory over celibacy and the one-child system. Decisions under the sterilization law should not be made according to a narrowly medical point of view or according to whether the person in question has proved his worth in life, but rather they should be based on larger considerations of public good and on a careful appraisal of the total value of both the individual person and of his family. The marriage advisory service should be yet further expanded. Thus far there have been established within the reich 745 eugenic health centers, 655 of which are under state and ninety of which are under communal control. During the first year following the establishment of these centers 333,000 applicants for marriage subsidies and 40,000 applicants for rural homesteads were there examined. Other of the centers' activities were 150,000 advisory interviews on problems of eugenics, constant supervision of 7,500,000 school children, group examinations of 2,500,000 school children and special observations on 500,000 school children. Antituberculosis centers to the number of 1,817 cared for 1,361,000 persons, 1,068,000 x-ray examinations and 605,000

other laboratory tests were there performed. More than two thirds of all nurslings in Germany were examined by the infant welfare service. Other branches of public health activity performed services for another 1,500,000 citizens. Altogether advice was dispensed to more than 7,000,000 persons.

The speeches of other ministerial officials illustrated to what an extent the care of the pregnant woman, the mother, the nursling and the school child has come to be regarded as a public responsibility. (The German people spend annually 5 billion reichsmarks on alcohol and tobacco, this figure represents 10 per cent of the national income.) The state will also dedicate itself to other tasks, such as care of the crippled, first aid in emergencies and industrial hygiene. In protective inoculation against smallpox the incidence of more serious immunity reactions has been reduced by performance of only two vaccination incisions instead of four. The procedures of protective antituberculous inoculation are being carefully worked out, the results obtained thus far are still not thoroughly comprehensible. Among diphtheria patients the proportion of the inoculated to the uninoculated is 1:64, among the fatal cases 1:144. The program of protective inoculation already under way in some fifty municipalities may have been responsible for a decline in diphtheria mortality since December 1936. The antituberculosis campaign has become a responsibility of the public health authorities. In accordance with the four year plan, an organized campaign is being waged against deterioration and waste with respect to dwellings, clothing and food. National drainage legislation is being framed which will assure removal of sewage both liquid and solid and the maintenance of a pure water supply.

The following figures were quoted during the discussion of food supply problems. Five years ago the German farmer supplied 74 per cent of the total nutrient caloric requirement of the nation, today 83 per cent is supplied domestically. The following are some percentages of the more important domestic produce consumed in Germany: meat from 89 to 95 per cent, dairy products from 70 to 80 per cent, bacon and lard from 60 to 70 per cent and nutrient fats 55 per cent. The persistent food shortage cannot be remedied by increase in the acreage under cultivation, as there is 20 per cent too little land. An increase in the amount of produce must therefore be primarily dependent on more intensive fertilization. Besides, the nation's needs can be better met by a more strictly dietetic measure, namely, a greater attention to the vitamic content of foods. Generally speaking, the carbohydrate content of the national food supply can be increased.

Dr Conti, Berlin municipal medical counselor, contributed some interesting data on obstetrics and the present status of midwives. The number of infants born in 1936 amounted according to his reckoning, to around 1,300,000 (twins included). The confinements of 75 per cent of all the women took place at home, those of 25 per cent in hospitals, whereas during 1924 in Prussia only 9 per cent of confinements took place in hospitals. This tremendous increase in the number of hospital confinements has been even greater in particular German localities, in Berlin the rate of increase was 63 per cent and in other cities it was even so high as 90 per cent. The slightest increases were in the predominantly agricultural provinces. The causes of this increase in the number of hospital confinements are diverse: increased popular inclination to regard hospital care as superior to home care, economic advantages due to defrayal of hospital expenses by some public agency such as a sick insurance club, a greater tendency of physicians to specialize, and superannuation of midwives. According to the national health bureau the mortality of mothers was 236 per cent of those confined at home and 707 per cent of those in a hospital. Curiously enough, those regions in which only a few parturient women were hospitalized showed the lowest mortality among mothers confined at home.

Professor Kerkhous of Bonn discussed the influence of the sum of hereditary and environmental factors on the development of the bite. According to his data, 97 per cent of the German people are affected with dental caries and more than 50 per cent with anomalies of the bite. Since obviously there is no racial immunity to caries and no criteria whatever exist for a peculiarly hereditary caries, a program of general prophylaxis should be initiated, based on a dietary rich in minerals and vitamins for the periods of pregnancy and lactation. Young children should receive a similar regimen and, in their case, the food should be solid enough to provide the bite with real work.

Hospital Statistics

According to the aggregate of available statistics, the total number of independent institutions for the sick within the German reich declined to 4,864 in 1935 against 4,921 in 1934, a drop of fifty-seven. These institutions were classified as shown in the following table:

Classification of Institutions

Year	Public	Charitable	Private
1934	2 187	1 516	1 218
1935	2 132	1 562	1 170

Despite the closing of fifty-seven hospitals the number of regular beds in all the hospitals of the reich increased in 1935 by 17 per cent compared with the year 1934 (1934 604,447 beds, 1935, 614,888 beds). A not inconsiderable increase took place in the number of patients treated, from 4,628,620 in 1934 to 4,993,988 in 1935. The number of hospital days increased from 168,600,000 in 1934 to 175,600,000 in 1935, namely by 4.2 per cent. At the same time the average stay in hospital per patient receded from 46.4 days to 35.2 days. In 1932 it had amounted to 39.3 days and even in 1933 to 37.4 days. In spite of the reduction in the average stay in the hospital, a constantly growing demand for beds has developed within the past three years.

Studies of Tuberculosis of the Skin

The dermatologic clinic of Giessen University has been particularly interested in the therapy of lupus and has gradually evolved a special routine. But as Prof. Walther Schultze, ordinarius in dermatology at Giessen said in the local medical society, the older therapeutic methods that have stood the test of time are still utilized. The main objective is to attain an abbreviation of the period of treatment without impairment of favorable end results. Of the general measures that of the special dietary is consistently followed. The patients are placed on a regimen rich in vitamins but poor in common salt. The overfeeding formerly in vogue is avoided. The patients also receive air baths and sun baths. Carefully planned heliotherapy has proved itself thus far the most beneficent measure. No treatments with artificially produced light have yet shown results comparable to those obtained by exposure to sunlight. In winter and at other times when the sun's light is lacking, the patients are submitted to general light baths, quartz mercury lamps of the type devised by Jesionek, former head of the clinic, or energy carbon arc lamps are used. In addition the lupus patients are given frequent baths of other kinds and massage. They engage in sports and are kept as active as the plan of therapy permits. For local treatments the Kromayer lamp is employed. Roentgenotherapy is rejected because of its unfavorable effect in lupus cases. Conversely a combination of grenz ray irradiation and planar excision of the disease foci with the diathermic snare has proved valuable, although neither of these procedures, if administered alone, will exert a particularly favorable influence. The combined therapy leads to more speedy cure. Favorable end results are of course predicated on an extremely meticulous technique, including careful measurement of the grenz ray dosage. The freshly excised surfaces of single foci of the disease are usually irradiated with 4,000

roentgens, of intensity of either 9 or 12 kilovolts. This procedure is repeated two or three times within the course of several weeks, so that each focus receives in all no more than from 10,000 to 12,000 roentgens. This therapy is not indicated for patients who have sustained injury due to rays, especially persons who have previously been submitted to radium or roentgen irradiation. Such patients are treated with the quartz lamp or carbon arc lamp. The latter has been proved of especial cosmetic value in after-treatment, as it leaves no disfiguring scars. The most satisfactory results are obtained in patients who have not previously undergone some unsuitable treatment.

ITALY

(From Our Regular Correspondent)

Aug 15, 1937

The Physician and the State

Prof. Francesco Pentimalli, director of the Istituto di patologia of the University of Naples, recently spoke in parliament on the relations between physicians and the state. He said that medicine has to be organized in a corporative form so as to give medical care to all persons who need it but are not able to pay for it, the same as is given soldiers and sailors. Farm hands receive medical care and hospitalization during the time they are giving services, whereas, when they are not, they have to resort to municipal or charitable hospitals. The speaker advised changing the laws by creating a ministry of sanitation for concentration of the various health departments that now form part of different ministries. He reviewed the organization of the antituberculosis departments. He advised carrying on systematic Pirquet cutaneous reactions in school children in order to be able to detect tuberculosis early and separate the affected from the healthy children. The Opera Nazionale per la Maternita e Infanzia carries on a praiseworthy work. However, it could be increased in the country in order to provide for the needs of mothers and children of the rural districts. The infant mortality from nutritional diseases is still high in rural areas because of the fact that mothers are not informed concerning the care and feeding of infants. Municipal physicians are prepared to meet the problem by courses of infantile pathology which was required during their university studies but feeding, education and social care of infants were not given the proper importance. The speaker pointed out the importance of establishing special courses of puericulture in all universities, the passing of which will be an obligation for those who apply for positions as municipal physicians.

Laws on Industrial Accidents

The laws on accidents resulting from work were recently reformed. Formerly the indemnity was restricted to the accident itself and was proportional to the injury. The benefit of the insurance was allowed only to those working in dangerous industries. By the new laws attention is given less to paying indemnities than to preventing accidents and industrial diseases and, in case they happen, to the administration of medical care and industrial reeducation for restoration of the working capacity of those either injured or ill. The benefit of insurance is given to those employed in any industrial, commercial or agricultural work which is lawful and of which there are about twenty types. Provisions are made for treatment and compensation of workers suffering from diseases contracted in the course of work. The definition of the words 'industrial accident' from a medicolegal point of view, is unchanged. It includes two causal factors "violence" during "work." The system of paying indemnities is also changed. Those insured will be given an annual allowance instead of the total amount of money that was previously paid. In cases of total permanent invalidity the annual allowance will be half the annual salary of the worker. The amount to be paid for temporary invalidity is two thirds the monthly salary. It was half the salary, according to the old law. Slight lesions with a short period of work-

ing incapacity are given little economic aid if any. The new laws sanction the view that those insured and suffering from industrial accidents cannot refuse medical treatment or operations which are deemed necessary by the insurance physician unless they give justifiable reasons in refusing the treatment. The insurance centers are responsible, by the new laws, for the expenses involved in hospitalization, medical treatment and industrial reeducation of those incapacitated from work. In this category men with working capacity reduced at least to 80 per cent from industrial accidents are included.

Bronchoscopy

Professor Malan, director of the Clinica otorinolaringoiatrica of Turin, recently gave a lecture to the military physicians in the city on the diagnostic and therapeutic value of bronchoscopy. Malgaigne, Trousseau and other physicians of the fourteenth century were the first ones to think of the possibilities of introducing certain instruments and liquids into the bronchi. The first bronchoscopy was made by Killian in 1895. The technic has been improved and the knowledge on the subject intensified. The operation was at first restricted to the removal of foreign bodies. Now it is indicated for the diagnosis and treatment of several diseases of the respiratory tract. In Chevalier Jackson's clinic at Philadelphia, 80 per cent of the bronchoscopies done are performed according to medical indications. The presence of cachexia, advanced tuberculosis, acute pneumonia, recent hemoptysis and grave pleuritis are, as a rule, the only contraindications. Jackson's bronchoscope carries a small lamp at its distal flute-mouthlike end which gives distal illumination to the bronchoscopic field with consequent visual control of the field and facility for work. The patient is placed in the dorsal position with the head out of bed and maintained by a special support at an inclination which can be regulated by the assistant. The operation is done with local procaine hydrochloride anesthesia of the larynx and bronchi. Bronchoscopy is indicated in spasms, hemorrhage and obstruction of the bronchi. The operation is indicated for the diagnosis and treatment of certain types of pulmonary suppurations, without proscribing medical treatment or other operations if they are indicated. It does not give satisfactory results in gangrene of the lung. Bronchoscopy induces complete recovery of patients suffering from acute abscess of the lung in 70 per cent of the cases, especially if the abscess is located at the parahilar region. Complete recovery from the operation is attained by only 50 per cent of patients who are suffering from subacute infection of the lung and in 20 per cent of the patients suffering from chronic suppuration of the lung. In cases of advanced bronchiectasis with auto-intoxication and cardiac insufficiency, bronchoscopy induces the so-called social recovery of the patients, by which the latter can work and be in society, in 50 per cent of the cases. Bronchoscopy gives also satisfactory results in the so-called postoperative atelectasis.

Marriages

ALEXANDER WILLIAM ADAMSKI, South Milwaukee, Wis., to Miss Katherine Margaret Poborsky of Milwaukee, June 26.

HENRY G. REYNOLDS, Paducah, Ky., to Mrs. Grace Morrison Poole of Ossining, N. Y., September 29.

CRAIG WRIGHT MUCKLE, Haverford, Pa., to Miss Christine Murdoch Kendrick of Philadelphia, June 3.

WILLIAM H. FICKEL, Las Animas, Colo., to Miss Helen Elizabeth Carlson of Denver, August 25.

GEORGE WILLIAM HEINTZELMAN to Miss Eva Louise Kuhns, both of Schnecksville, Pa., June 11.

EMANUEL M. ARNOVITZ to Miss Margaret F. Beck, both of Granite City, Ill., August 11.

MARVIN E. ARRINGTON, Vaiden, Miss., to Miss Edythe Dec of Gulfport in Jackson in July.

Deaths

Charles Ludvey Davis, Pasadena, Calif., St. Louis University School of Medicine, 1908, member of the American Academy of Ophthalmology and Oto-Laryngology and the Pacific Coast Oto-Ophthalmological Society, served during the World War, formerly instructor in clinical otology, Washington University School of Medicine, St. Louis, at one time assistant otolaryngologist to the Barnes Hospital and St. Louis Children's Hospital, St. Louis, surgeon to outpatients Washington University Dispensary, St. Louis, surgeon to St. Louis City Hospital and consultant to Barnard Skin and Cancer Hospital, St. Louis, aged 53, died, July 25, of cerebral embolism.

Charles August Bentz of Buffalo, University of Buffalo School of Medicine, 1902, assistant professor of medicine at his alma mater, member of the American Association of Pathologists and Bacteriologists, Society of American Bacteriologists and the American Society of Clinical Pathologists, director of the division of communicable diseases of the city department of health and superintendent of laboratories, at various times on the staffs of the J. N. Adam Memorial Hospital, Perryburg, Buffalo Eye and Ear Infirmary, Buffalo Hospital of the Sisters of Charity, Memorial Hospital and St. Mary's Maternity Hospital, aged 58, died, July 25, of endocarditis.

Samuel Dana Hubbard, Freeport, N. Y., Bellevue Hospital Medical College, New York, 1891, for many years director of public health education, city board of health of New York, formerly professor of hygiene and sanitation, New York Medical College for Women, veteran of the Spanish American War, at various times on the staffs of the New York City Children's Hospital, New York, the Letchworth Village, Thells, and the Vanderbilt Clinic, New York, author of a treatise on diseases of the hair and scalp, aged 68, died July 12, in the New York Hospital, of carcinoma of the stomach.

Frederic Bierhoff of New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889, member of the American Urological Association, fellow of the American College of Surgeons, consulting cystoscopist, Gouverneur Hospital, genito-urinary surgeon to the Home for Aged and Infirm Hebrews, aged 69, died, July 31, in Blue Hill, Maine.

Charles Milton Clark, Akron, Ohio, Medical College of Virginia, Richmond, 1913, member of the Ohio State Medical Association, served during the World War, formerly in charge of the department of biology, and college physician at the Hampden Sidney (Va.) College, on the staff of the Akron City Hospital, aged 47, died, July 22, of carbuncle and septicemia.

Charles Hunter Cunningham, Auburn, Maine, Medical School of Maine, Portland, 1909, member of the Maine Medical Association and the Radiological Society of North America, fellow of the American College of Surgeons, consulting surgeon to the Central Maine General Hospital, aged 54, died, July 14, of cerebral hemorrhage.

Charles William Bray of Biwabik, Minn., University of Minnesota College of Medicine and Surgery, Minneapolis, 1895, formerly vice president of the Minnesota State Medical Association, for many years president of the school board, medical superintendent and owner of the Biwabik Hospital, aged 68, died, July 7, of coronary disease.

Bernhard Gustav Harff, Cincinnati, Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn, Prussia, Germany, 1875, formerly a member of the board of trustees of the University of Cincinnati, aged 89, died, July 14, in St. Francis Hospital, of compound fracture of the ribs and puncture of the lung.

Alonzo Clark Hunt, Metuchen, N. J., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1881, member of the Medical Society of New Jersey, for many years a member of the state board of health, aged 78, died, July 13, in Mantoloking of an accidental gunshot wound.

Thomas Joseph Flynn of Colonel, M. C., U. S. Army, St. Louis, Albany (N. Y.) Medical College, 1905, entered the Medical Corps of the U. S. Army as a first lieutenant in 1911, was promoted through the various grades to that of lieutenant colonel in 1931 and in 1937 a colonel, aged 56, died, July 4.

Harriet Elizabeth Balch-Holmes, Pequanock, N. J., Woman's Medical College of the New York Infirmary for Women and Children, 1897, for many years on the staff of the Craig Colony, Sonyea, aged 67, died, July 25, in Oakland of paralysis agitans, nephritis and arteriosclerosis.

Charles Sawyer Bryant, Millinocket, Maine, Harvard University Medical School Boston 1900, member of the Maine Medical Association, served during the World War, owner of a hospital bearing his name, aged 63, died, July 17, in the Eastern Maine General Hospital, Bangor

James Vickers Anglin, St John, N B Canada, Queen's University Faculty of Medicine, Kingston, Ont, 1887, member and past president of the American Psychiatric Association, for many years superintendent of the Provincial Hospital at Fairville, aged 77, died, July 8

George Whitefield Overholser ♂ Reading, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1902, past president of the Berks County Medical Society, on the staff of the Reading Hospital, aged 63, died, July 10, of carcinoma of the pancreas

Fred Walter Comstock, New Haven, Conn, Tufts College Medical School, Boston, 1913, member of the Connecticut State Medical Society, served during the World War, on the staff of the Grace Hospital, aged 48, died suddenly, July 17, of cerebral hemorrhage

Martin John Cromwell, Ruston, Md, University of Maryland School of Medicine, Baltimore 1894, member of the Medical and Surgical Faculty of Maryland, aged 65, died, July 14, in the Johns Hopkins Hospital, Baltimore of acute pyelonephritis

Roy M Buchanan, Decatur, Ala, University of Tennessee Medical Department, Nashville, 1900, member of the Medical Association of the State of Alabama, aged 58, died, July 1, in the Benevolent Society Hospital, of duodenal ulcer and pyloric obstruction

Harry Joseph Handelman ♂ New York, Fordham University School of Medicine, New York, 1917, fellow of the American College of Surgeons, on the staff of the Fordham Hospital, served during the World War, aged 46, died, July 11

William Penn Coyle ♂ Orange, Texas, Southwestern University Medical College, Dallas, 1906, formerly a dentist, city health officer, served during the World War, on the staff of the Frances Ann Luther Hospital, aged 58, died, July 31

William Brown Doherty, Louisville, Ky, University of Louisville Medical Department, 1872, emeritus professor of obstetrics in his alma mater, aged 90, died July 25 in St Joseph Infirmary, of acute appendicitis and bronchopneumonia

Merlyn Bush Call ♂ Greene, Iowa, State University of Iowa College of Medicine, Iowa City, 1911, formerly secretary of the Butler County Medical Society, aged 54, died, July 14, in St Joseph Mercy Hospital, Waverly, of uremia

Thomas Gordon Dickson, Troy, N Y, University of Pennsylvania Department of Medicine, Philadelphia, 1891, veteran of the Spanish-American War, formerly on the staff of the Troy Hospital, died, July 8, in the Samaritan Hospital

Frederick John Bowen, Mount Morris, N Y, College of Physicians and Surgeons of Chicago, 1890, member of the Medical Society of the State of New York, for many years county coroner, aged 71, died, July 28, of lymphosarcoma

Claude Jacob Bradshaw, Carrsville, Va, Medical College of Virginia, Richmond, 1892, member of the Medical Society of Virginia, aged 68, died, July 27, in the Lakeview Hospital, Suffolk, of coronary occlusion and hypostatic pneumonia

Franklin Austin Knope ♂ Rochester, N Y, University of Buffalo School of Medicine, 1917, fellow of the American College of Surgeons, served during the World War, attending surgeon to the Highland Hospital, aged 42, died, July 3

William A Clark, Bald Knob, Ark, St Louis College of Physicians and Surgeons, 1892, member of the Arkansas Medical Society, past president of the White County Medical Society, aged 69, died, July 8, of cerebral thrombus

Eva St Clair Osburn Barber, Los Angeles, College of Physicians and Surgeons, Keokuk, Iowa, 1886, at one time on the staffs of St Joseph's and Tacoma General hospitals, Tacoma, Wash, aged 80, died, July 5, of bronchopneumonia

Henry Nehemiah Dodge, Morristown, N J, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1868, also a dentist, aged 94, died, July 24, of cerebral hemorrhage and arteriosclerosis

William Clayton Whittenberg, Stillwater, Okla, St Louis College of Physicians and Surgeons, 1900, veteran of the Spanish-American War, owner of the Stillwater Hospital, aged 66, died, July 1, of mesenteric thrombosis

Benjamin Harvey Carlton, Donalds, S C, University of Georgia Medical Department, 1894, member of the South Carolina Medical Association, for many years bank president, aged 66, died, July 22, of coronary occlusion

William Wilder Hopkins ♂ Geneva, N Y, New York Homeopathic Medical College and Hospital, New York, 1893, formerly on the Geneva General Hospital, aged 67, died, July 5, of coronary occlusion

James Kester Biddle, Bend, Ore, College of Physicians and Surgeons, Baltimore, 1909, served during the World War, formerly coroner of Richland County, Ohio, aged 53, died, July 25, in a local hospital

Robert C Ellis, Shelby, N C, Baltimore University School of Medicine, 1886, member of the Medical Society of the State of North Carolina, aged 80, died, July 25, of carcinoma of the stomach

Herman Shube ♂ Cleveland, Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1910, formerly on the staff of St Luke's Hospital, aged 51, died, July 5

Charles Alexander Campbell, Jamaica, N Y, Bellevue Hospital Medical College, New York, 1897, member of the Medical Society of the State of New York, aged 62, died, July 7, in New York

Robert Crawford Irwin, Hollidaysburg, Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1879, aged 82, died, July 7, in the Mercy Hospital, Altoona, of carcinoma of the colon

Edgar William Alexander ♂ San Francisco, University of California Medical Department, San Francisco, 1905, member of the Pacific Coast Oto-Ophthalmological Society, aged 59, died, July 21

Marie Antoinette Bennette, San Bernardino, Calif, Cooper Medical College, San Francisco, 1885, member of the California Medical Association, aged 78, died, July 27, in a local hospital

Henry Mosley Dismukes, Minter, Ala, University of Tennessee Medical Department, Nashville, 1907, member of the Medical Association of the State of Alabama, aged 56, died, July 22

Henry Redmond, Corpus Christi, Texas, University of Pennsylvania Department of Medicine, Philadelphia, 1886, aged 77, died, July 1, of chronic myocarditis and hypostatic pneumonia

Albert Edward Campbell, Agoura, Calif, University of Buffalo School of Medicine, 1886, at one time city health officer of Springfield, Ill, and Sioux Falls, S D, aged 77, died, July 15

Earl Bell ♂ Wilmington, Del, Medico-Chirurgical College of Philadelphia, 1909, aged 56, died, July 8, in the Delaware Hospital, of pulmonary infarct and acute gangrenous appendicitis

George Randall Anderson ♂ Easton, Pa, Jefferson Medical College of Philadelphia, 1882, aged 80, died, July 23, in the Lankenau Hospital, Philadelphia, of sarcoma of the colon

David Simeon Belanger, New Bedford, Mass, School of Medicine and Surgery of Montreal, Que, Canada, 1892, aged 78, died, July 18, of diabetes mellitus and gangrene of the right foot

James R Barnett Jr, Neenah, Wis, Rush Medical College, Chicago, 1897, for many years city physician, aged 62, died, July 11, of coronary thrombosis and arteriosclerosis

George G Irwin ♂ Mount Holly Springs, Pa, College of Physicians and Surgeons, Baltimore, 1892, aged 76, died, July 10, of coronary thrombosis and chronic myocarditis

Adelbert Stephen Dederick ♂ Woodhaven, N Y Albany Medical College, 1906, on the staff of the Lutheran Hospital, Brooklyn, aged 55, died, July 17, of angina pectoris

Frederick Charles Anthes, Watertown, Mass, University of the City of New York Medical Department, 1884, aged 77, died, July 20, of carcinoma of the prostate

Calvin Norwood Wherry ♂ Upper Darby, Pa, Jefferson Medical College of Philadelphia, 1902, aged 57, died suddenly, July 7, in Doylestown, of cerebral hemorrhage

Elisha H F Farlow, Laurel, Del, Baltimore University School of Medicine, 1891, for many years mayor, aged 78, died, July 6, of myocarditis and chronic nephritis

Frederick F Davis, Sassafras, Va, Medical College of Virginia, Richmond, 1894, aged 66, died, July 18, in St Elizabeth's Hospital, Richmond, of leukemia

George Washington Bader, St Louis, Washington University School of Medicine, St Louis, 1904, aged 59, died, July 16, of coronary thrombosis

Ernst Custeen Brasington, Kershaw, S C, Rush Medical College, Chicago, 1888, aged 77, died July 29

Correspondence

USE OF METHYLENE BLUE IN METHEMOGLOBINEMIA FROM SULFANILAMIDE POISONING

To the Editor—In 1933 Williams and Challis (*J Lab & Clin Med* 19 166 [Nov] 1933) reported that methylene blue was effective as an antidote for parabromaniline poisoning. Shortly afterward Steele and Spink (*New England J Med* 208 1152 [June] 1933) used methylene blue in a case of aniline poisoning and also in one of acetanilid poisoning, with what they considered dramatic recoveries. Both groups of workers stated that the methemoglobinemia shown by their patients before administration of methylene blue rapidly disappeared following intravenous injection of the dye. Williams and Challis, subsequent to treatment of their patient, carried out experiments on rabbits, the results of which they considered as justification for their claim that methylene blue had been responsible for the rapid improvement of their patient. Little attention appears to have been paid these observations and the writers themselves have not commented further in the literature on what, if substantiated, would appear to be a discovery of major therapeutic importance. This is especially true now that effective therapy with sulfanilamide is, at least in some individuals, limited by methemoglobin formation.

Prior to the appearance of these papers, I had proved to my own satisfaction that methylene blue acts as an antidote for cyanide poisoning because it forms methemoglobin (*THE JOURNAL*, April 1, 1933, p 1054, *J Pharmacol & Exper Therap* 54 283 [July] 1935). It therefore seemed unlikely that methylene blue could accomplish the reverse effect. Furthermore, I was not convinced that the spectrograms published by Williams and Challis supported their claims. I find now, however, that these workers were correct in their belief that methylene blue hastens conversions of methemoglobin to hemoglobin in the circulating erythrocytes. With the assistance of Mr Charles Anderson and Miss Jane Erganian, extensive experiments have been carried out on dogs and rabbits to determine the effect of various amounts of methylene blue on methemoglobinemia produced by sodium nitrite. Briefly, we have found that intravenous injection into dogs of 5 mg of methylene blue per kilogram of body weight increases the rate of methemoglobin conversion to hemoglobin about eight or ten fold, i e., the rate is eight or ten times as fast as the physiologic rate. The physiologic rate in dogs, as determined by a series of normal controls, is about 18 volumes per cent (135 Gm per hundred cubic centimeters of blood) per hour. Larger amounts of methylene blue are more effective and smaller amounts less effective. However, 1 mg of methylene blue per kilogram of body weight increases the rate in dogs three or four fold and even 0.1 mg per kilogram has a detectable effect.

The object of our first experiments was to produce methemoglobin in animals by administration of sulfanilamide and then to investigate the possibility of controlling the methemoglobinemia by another substance. We were not successful, however, in producing methemoglobinemia with sulfanilamide in dogs and rabbits even though large doses were given and the blood sulfanilamide concentration rose in some animals to 75 mg per hundred cubic centimeters. Indeed, most of the animals showed no signs of toxicity until the blood sulfanilamide concentration reached 50 mg per hundred cubic centimeters or higher. At about this concentration dizziness appeared and increased in intensity as the blood sulfanilamide concentration rose. Methylene blue (10 mg per kilogram) injected at a time when the animals were extremely toxic did not increase the severity of the symptoms.

In the light of these observations and at my suggestion, Dr Alexis F Hartmann, professor of pediatrics at Washington

University School of Medicine, injected methylene blue into two children showing moderate degrees of cyanosis and methemoglobinemia from sulfanilamide with results comparable to those obtained in experimental animals. A single injection of 1 mg of methylene blue per kilogram of body weight reduced the methemoglobin from 20 per cent of the total pigment to less than 3 per cent of the total in forty-five minutes in one patient, and from 18 per cent to less than 3 per cent in the other in a similar period. It appears that methylene blue may be of great value in decreasing the severity of the methemoglobinemia in patients who show unusual sensitiveness to sulfanilamide. Furthermore, it seems possible that the effectiveness of sulfanilamide therapy might be greatly increased if a higher blood concentration of the drug could be maintained by means of simultaneous administration of methylene blue. Before this is attempted, however, the effect of methylene blue on the therapeutic activity of sulfanilamide and the effect of repeated administration of methylene blue on the normal animal must be determined. These questions are being investigated. Also the possibility that the methylene blue might be effective orally is being considered.

The accelerating action of methylene blue on conversion of methemoglobin to hemoglobin is catalytic. Indeed, in this reaction the catalysis is one of reduction. The possibility of using foreign oxidation-reduction systems like methylene blue to catalyze reduction processes in the body has not been considered heretofore. Methylene blue and similar oxidation-reduction systems have been added to isolated tissues or administered to animals by students of biologic oxidation processes, usually with the intent of catalytically increasing oxidation processes. It has been expected, or at least hoped, that the reduced form of the system would react with molecular oxygen regenerate the oxidized form, and thus complete the oxidation cycle. The possibility that the reduced form of the system might escape autooxidation and accomplish reduction of some cellular constituent appears to have been overlooked.

The reported results are not at variance with the evidence that methylene blue converts hemoglobin to methemoglobin and with my explanation of the antagonism of methylene blue for cyanide in the living animal based on this evidence. A supplementary and, to me, unexpected aspect of the question has been revealed.

Details of the experiments are being prepared for publication.

WILLIAM B WENDEL, PH D, St Louis

From the Departments of Biological Chemistry
and Internal Medicine, Washington University
School of Medicine

BETWEEN RESPIRATORY PARALYSIS AND THE RESPIRATOR

To the Editor—The present epidemic of poliomyelitis appears to present a medical emergency from the point of view of the treatment of acute asphyxia. It is well recognized that the most satisfactory form of routine artificial respiration for this type of case is by the negative pressure cabinet. There is, however, a sharp break in the link of treatment which occurs not infrequently between the period when asphyxia has developed as a result of ascending muscular paralysis and that time when negative pressure cabinet facilities become available.

Press reports would suggest that patients who are out of touch with such treatment in such an emergency perish.

My experience with resuscitation suggests the use of laryngoscopy, intubation and insufflation of oxygen under pressure as a practical means of tiding over this fatal period.

To my great astonishment inquiries directed to personnel interested in the care of such cases reveals that this technique has not been used and is not being used and that its value is not generally understood.

From repeated experience in the support of the asphyxiated patients, over hours whose respirations have completely disappeared and remain in abeyance I know that given a functioning circulation, such a patient can be cured for a period sufficient to reach a negative pressure cabinet even though it may be removed a distance of several hundred miles

PAUL H. J. FLACC, M.D., New York

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

VACCINES IN COLDS

To the Editor—What is the present status of vaccines for colds? If they are valuable, what organisms should be used in the vaccines?

M.D. New Jersey

ANSWER—The term "colds" is a useful waste basket for those symptoms to which a specific name cannot be attached. Recent evidence indicates that true influenza can and should be sharply differentiated, and there may be other specific bacterial or virus diseases which should and eventually will be removed from this scrap heap.

All investigations to date have consistently shown a wide variety of bacteria present in colds. This fact necessitates the assumption either that colds are not due to any specific organism but that symptoms which we recognize by that term can be produced by a large number of different bacteria or that the specific cause has not yet been identified. Some colds are probably due to a specific virus. It is evident therefore that any attempt made now to produce immunity by vaccines must be aimed at a combination of organisms with the hope of chance inclusion of the right one, or that the combination also by accident contains the as yet unidentified principle which causes all colds. Neither of these possibilities seems to offer a scientifically rational approach to prophylaxis.

The duration of acquired immunity is another important question. Since the actual having of a cold seems to produce in most people at least, little if any lasting immunity to subsequent colds it would seem doubtful that vaccines could produce any more successful immunity. Even if vaccines do produce a greater immunity it would probably be necessary to administer them continuously in order to avoid rapid increase in susceptibility. All these facts apply to any of the vaccines available today either for parenteral or for oral administration.

In conclusion therefore, there is no real scientific evidence supporting the use of vaccines for the common cold. In those individual instances in which benefit seems to result this apparent effect may be due either to the individual fluctuation in frequency which is generally observed or to some nonspecific stimulation of immunity created by the administered proteins.

TREATMENT OF LYMPHATIC LEUKEMIA

To the Editor—Please send me the information you can on the treatment of lymphatic leukemia.

J. W. STECKHAUER, M.D., Manitowish

ANSWER—The treatment of lymphatic leukemia depends first on whether the case is acute or chronic. In the acute type with rapid onset, relatively low white count, young leukocytes, marked anemia and often septic temperature no treatment is known to exert any benefit. Blood transfusions can be tried. In the chronic type, with large number of relatively mature lymphocytes, treatment is similar to that of chronic myelogenous leukemia. X-rays and solution of potassium arsenite are the most effective forms of therapy. X-rays can be given over the bones or spleen until the white count is reduced nearly to normal. Treatment is again instituted on recurrence of symptoms. Solution of potassium arsenite although not so effective as the X-rays, is frequently beneficial. Doses must be increased to the point of tolerance and can be continued for from four to five weeks. Alternate use of these two remedies often proves satisfactory.

TOXIC GASES FROM DYNAMITE AND TNT EXPLOSIONS

To the Editor—A patient claims he is suffering from the inhalation of gases following the explosion of dynamite in an underground shaft. One man of a group who inhaled the gas died and now my patient seven weeks following the accident still complains of vague chest pains and shortness of breath. What gases are formed from TNT explosion and what effect would they have on the bronchial mucosa?

H. W. NOTTLEY, M.D., White Plains, N.Y.

ANSWER—This query implies that dynamite and TNT are the same sort of blasting explosive. More properly speaking, dynamite represents various grades of nitroglycerin or nitrostarch while TNT is trinitrotoluene. However, TNT is used as a blasting explosive as described in a publication by Monroe and Spencer in circular 94, U.S. Department of Agriculture, May 1920. Nitroglycerin is much more widely used as an explosive in mining operations.

The gases produced from the burning of dynamite are more injurious than those from the explosion of the same substance. In either case the chief gases produced are carbon dioxide, carbon monoxide, nitrogen oxides and rarely hydrogen sulfide or other sulfur compounds. From the explosion of trinitrotoluene large quantities of carbon monoxide may be produced, which usually renders this explosive unsuited for underground purposes.

In the accident mentioned in the query, the responsible agent is likely to be carbon monoxide, oxides of nitrogen or a mixture of the two. The condition of the miner who died should furnish clues as to the responsible gas. If marked pulmonary edema or other evidence of inflammation of the respiratory tract dominated the picture, it is likely that oxides of nitrogen were the chief offenders. Contrariwise, if the usual results of the formation of carboxyhemoglobin were presented, carbon monoxide may be regarded as the probable cause.

With regard to the workman who alleges that he is sick seven weeks after the accident, it is to be remembered that neuroses without organic involvement may arise. It is unlikely that residual manifestations are on an organic basis at this late time, unless shortly after the accident this miner was unconscious from carbon monoxide poisoning or had pulmonary edema, pneumonia or severe bronchitis as a result of the action of oxides of nitrogen. If such was the case, residual manifestations on an organic basis are possible, particularly if nitrogen oxides were present and contributed to the initial injury.

CARBON ARC LAMPS

To the Editor—1. What is the therapeutic value of the carbon arc? 2. Does it destroy bacteria? 3. Is the light made by the Landun Corporation of Terre Haute Ind. satisfactory?

DDS, Indiana

ANSWER—1. The carbon arc is one of several types of generators of ultraviolet radiation. So far as it is known the therapeutic value of all sources of ultraviolet radiation are much alike. The carbon arc is the hottest radiation readily obtainable and in this respect it is the closest approach to the sun. However the radiation from the carbon arc is far from being like sunlight. There are three important factors to be considered when using a carbon arc for therapeutic purposes: (a) the kind (impregnated material) and size of the carbons; (b) the distance between the recipient and the arc; and (c) the quantity of current. The size of the carbon and the kind of material used in the core of the carbon are important factors. The 30 ampere arc with 13 mm carbons (therapeutic C) give a quantity and quality of energy useful for therapeutic purposes. Assuming that the distance between the arc and the patient remains the same the 15 ampere arc with 10 mm carbons is only about one fifth of this quantity while the 10 ampere arc with the 6 mm carbons supplies only about one twenty fifth of the energy. This means that the radiation from the smaller carbons would take a much longer time to produce a therapeutic effect than the larger one.

2. The carbon arc has a bactericidal effect just as ultraviolet radiation from any other source. A further interpretation of this action, however, should be considered since the proof of it is established only with bacteria in petri dishes whereas its efficacy in the open wound remains to be proved. Ultraviolet radiation has been used for example in the sterilization of water in swimming pools. The diseases benefited by ultraviolet radiation are summarized in the short article issued by the Council on Physical Therapy, 'Regulations to Govern Advertising of Ultraviolet Generators to the Public.' Reprints may be obtained from the Council.

3. The lights made by the Landun Corporation of Terre Haute Ind. have not been submitted to or investigated by the Council on Physical Therapy. The Council's specifications

of minimum intensity are based on a comfortable and convenient operating distance (24 inches from the front edge of the reflector), at which distance the exposure can be made without burning the skin by coming in contact with the burner or by the infra-red rays. The ultraviolet intensity of the lamp shall be such that the time of exposure to produce a minimum perceptible erythema (one that disappears in less than twenty-four hours) will not be longer than fifteen minutes for a therapeutic lamp and sixty minutes for so called sunlamps.

POSSIBLE DIAGNOSIS OF ADDISON'S DISEASE

To the Editor—A banker aged 48, weighing 240 pounds (119 kg) and 5 feet 11 inches (180 cm) in height, with past history negative except for appendectomy about ten years ago has nervousness, irritability, marked fatigue, gas distention and fullness after eating, loss of libido and sexual power and a feeling of internal chilliness even when sufficiently covered. He is a rather obese individual with a large amount of abdominal and girdle fat. The eyes, ears, nose and throat are normal. The chest except for a fatty deposit about the breast is normal. The heart is normal with tones rather weak. The pulse is soft and weak. The blood pressure is 80 systolic, 60 diastolic. The hemoglobin was 85 per cent. The blood count was otherwise normal. Urinalysis was negative. The tuberculin skin test was positive. The skin was clear and somewhat clammy. The muscles were soft and flabby. I made a diagnosis of probable adrenal gland deficiency. During the summer I gave arsenic and strychnine hypodermically with some gland extract by mouth and the patient reacted favorably with blood pressure elevating to a systolic of 110. He came to see me about a month ago and the blood pressure was 100/68. He did not react to the arsenicals intravenously and about one week ago I began using a commercial adrenal extract. The patient was seen today after two injections with a blood pressure of 114/76. He is still nervous and irritable. The question in his mind is how do I know the diagnosis to be correct and how long will he have to be under treatment? I told him quite clearly that at autopsy I could remove the adrenal gland and see whether or not there is a simple atrophy or tuberculosis of the gland and as for the treatment he would have to be under it indefinitely. Naturally I have in mind that he has Addison's disease to a minor degree and I want to know whether there is any way to prove my diagnosis other than by his feelings after the administration of cortical extracts. M D South Carolina

ANSWER—There seems to be no evidence in this clinical record of Addison's disease. Further evidence of value might be obtained by taking an x-ray film of the adrenal glands to determine whether or not extensive calcification exists in them (areas of calcification, however, may occur in normally functioning adrenals). The level of the blood sodium and of the blood urea might likewise prove enlightening. If the evidence from these three laboratory determinations proves negative, the possibility of Addison's disease is negligible.

In view of the sensation of chilliness, the overweight and the irritability, a basal metabolism test seems desirable. If low, thyroid medication might prove helpful. It would seem desirable also to investigate the loss of libido and potentia in order to determine its cause.

SHORT WAVE DIATHERMY

To the Editor—I have followed diathermy through all the various stages and have purchased each new development mainly to get away from one thing—aching of the part during and after treatment. It is not possible to treat a joint (with no adequate heat input) without this aching. I know it is usually ascribed to excessive heating or the faradic sensation I am using a 17 meter short wave machine. Can you give me an authoritative opinion? M D California

ANSWER—The degree of heat brought about by conventional diathermy or any of the short wave machines takes place in accordance with Joule's laws. The whole technique of diathermy is based on these primary physical laws.

The aching of the part following a local treatment with diathermy or short wave machines is due to the fact that the current flow is either too strong over a short period or the treatment is given over too long a time. The pain thus produced is due to a vascular and lymphatic congestion causing pressure on the nerve endings.

From the standpoint of technique let it be assumed that the electrodes of conventional diathermy have been applied properly, are not too small or too long and are of equal size and equidistant at all points of the electrode. In other words the two planes of the electrodes should be parallel. The current flow should be turned on slowly and increased at an even rate for the first five minutes until the patient states that he is receiving a comfortable warmth. When this point is exceeded or the rise is too rapid there is too intense vasodilatation and pain naturally results. The rule which should be constantly kept in mind is that the technician should at no time exceed the patient's tolerance and should at no time permit a too rapid

rise of current flow or give a treatment over too long a period. The average time for such a treatment is one half hour.

If, during the treatment, aching or pain occurs, the current should be decreased or the time interval cut down until the patient is again comfortable.

If the aching sensation persists after the current has been turned down, the electrode should be removed and the part placed in the whirlpool or warm moist dressings applied. This will give instant relief.

The short wave medical diathermy machines that have been accepted by the Council on Physical Therapy use the cable electrode for the electromagnetic induction and the double cuff electrodes, or air-spaced electrodes placed on the same side as the part to be treated, for the electric field.

Machines that have been accepted by the Council on Physical Therapy of the American Medical Association have been checked carefully to make sure that there is no faradic sensation or neuromuscular response.

INFECTION WITH INFLUENZA FROM ANESTHESIA MACHINE

To the Editor—I should like to have some information concerning the possibility of a patient contracting influenza by being given an anesthetic with a machine which had been used on a patient in an emergency who had a mild influenza at the time. I am using a McHesson machine and am giving a nitrous oxide oxygen ether combination for general surgical operations. The machine is of the closed type. About six weeks ago it was necessary to give the influenza patient an anesthetic and since that time I have had three patients develop what was apparently a mild influenza on the second day after operation. However not all the patients given an anesthetic since that time have developed the condition.

M D Tennessee

ANSWER—The manufacturers of present day gas machines have had little help in the construction of equipment so that it will not be easily contaminated. At present the experience cited is readily possible and might easily be due to an infected gas machine. T. B. Magath has suggested the inclusion of a water trap between the patient and the gas machine, thereby saving the gas machine from contamination. The sterilization of the mask and the inhaler tubings can then be carried out and the possibility of having one patient become infected from another will be largely eliminated. With influenza, of course it is always difficult to say where the individual picked up his infection. The problem, however, of overcoming just this difficulty is at present only beginning to be attacked.

DIAGNOSIS OF BRUCELLOSIS

To the Editor—A patient sick for a year is tired and worn out but has no pain oraches. There is no loss of weight. The temperature begins to rise about 1 p.m. and reaches its highest point (from 103.6 to 104 F) about 9 p.m. A frothy mucilaginous material is coughed up at this time. On two occasions the patient has coughed up blood. He is not conscious of the high temperature. With the drop in temperature he has drenching sweat. Physical examination reveals nothing abnormal except enlargement of the liver and spleen. The lungs and gastrointestinal tract appear normal on x-ray examination and tests of the blood are negative for bacteria; there is secondary anemia. Is this undulant fever? The blood does not show it. If it is undulant fever, what line of treatment is advised? What diseases would give a patient these symptoms? WILLIAM L. COWLES, M.D. Shawmut, Ala.

ANSWER—The diagnosis cannot be made from the data given. Some of the diseases which might be considered in the differential diagnosis are tuberculosis, chronic bronchitis or bronchiectasis, hepatic cirrhosis with splenomegaly, chronic malaria, pyelitis or pyelonephritis, lymphoblastoma, subacute bacterial endocarditis and undulant fever.

Repeatedly negative reactions to agglutination tests or negative blood cultures do not entirely eliminate the possibility of brucellosis (undulant fever). The intradermal test utilizing heat-killed or formaldehyde-killed *Brucella* organisms, or the use as an antigen of the standardized *Brucella* nucleoprotein in suspensions (brucin) developed by Huddleson is of value in identifying persons who have acquired cutaneous sensitiveness after the invasion of the tissues by living *Brucella* organisms. The *Brucella* melitensis vaccine (N.N.R.) may be used for the cutaneous test; the vaccine is available through the usual trade sources. This test is of value in the diagnosis of brucellosis particularly in persons (about 5 per cent) in whom no agglutins for *Brucella* are found in the blood serum after repeated testing and in instances in which *Brucella* cannot be grown on culture of the blood, urine or stools. The cutaneous test is also of value in cases in which the agglutination reaction is doubtfully positive in low titer (from 1:10 to 1:100). In interpreting the results of the endermic reaction one must

consider the fact that presumably normal persons may acquire cutaneous hypersensitiveness without symptoms of illness as the result of previous subclinical (asymptomatic) infection with *Brucella*. Cutaneous sensitiveness may also remain after recovery from brucellosis. Thus, a person who has cutaneous hypersensitiveness to *Brucella* antigen may be suffering from some other disease at the time the test is made. A positive reaction to a cutaneous test may be merely the result of asymptomatic or symptomatic brucellosis acquired some months or years previously.

The opsonocytaphagic test of Huddleson (*Am J Pub Health* 23:917 [Sept] 1933) appears to be of considerable value in determining the immunity status of persons who acquire a positive reaction to the cutaneous test. The method involves the measuring of the phagocytic power of the polymorphonuclear leukocytes in an opsonocytaphagic system. The absence of marked phagocytic activity of the polymorphonuclear leukocytes in a patient with a positive reaction to the cutaneous test is believed to indicate active infection due to *Brucella* organisms and a lack of immunity. The presence of marked phagocytic activity would indicate either a developing or an established immunity. If marked phagocytic activity and a positive reaction to the cutaneous test are demonstrated in a patient with fever, it is likely that the fever is due to some disease other than brucellosis. Keller, Pharris and Gaub (*THE JOURNAL*, Oct 24 1936 p 1369) reported favorably on the practicability of the opsonocytaphagic test. In interpreting the results of any of the tests for brucellosis one must give due regard to the clinical symptomatology. If repeated agglutination tests give negative results and if the reaction to the intradermal test is negative, it is unlikely that the patient has or has had brucellosis.

EPILEPSY

To the Editor—A white woman aged 21 in good health had an attack of loss of consciousness. There were four subsequent attacks over a period of eighteen months. An accurate description was not obtained but there was a sudden loss of consciousness lasting only a few minutes with no premonitory signs there was no convulsion but the right arm was held rigid. The stupor was profound on one occasion she injured herself severely and painfully but did not regain consciousness until several minutes later. She is sweet and intelligent there being no evidence of character or mental deterioration. She had been struck in the head by a golf ball with no loss of consciousness several years before the first attack. After the last attack neurologic examination complete ophthalmologic blood spinal fluid and encephalographic examinations were all declared negative by a prominent neurologist. The menses are very profuse last from five to seven days and occur every four to seven weeks. The history otherwise is negative except that a cousin may have epilepsy this is not certain. There have been no attacks for fourteen months during which time the patient has been taking phenobarbital calomel and epsom salt every two to three weeks and is on restricted fluid and a low salt diet. The problem of marriage has now arisen and I should like the following questions answered. Is a diagnosis of epilepsy reasonable? What is the possibility of more attacks? What is the possibility of any children having epilepsy? Might they have a severe type or would it be the same as the mother's? As more than a year has elapsed since the last attack need the prospective husband be told of the condition of the patient? Would anything be gained by waiting a year or more to see whether there will be more attacks?

MD New York

ANSWER—The diagnosis of the convulsive state (epilepsy) depends entirely on the history regarding foaming at the mouth biting of the tongue incontinence of urine and feces, premonitory symptoms and somnolence after the seizure. The rigidity of the right arm strongly suggests the tonic element of a convulsion. If there are no other causes of paroxysmal attacks of profound unconsciousness found, it is likely that the patient has epilepsy. She should be reexamined every four to six months to determine the presence of objective organic signs and symptoms. If she has epilepsy and is not given sufficient anticonvulsant medication, she may have more attacks. Epilepsy is not considered to be actually hereditary but there are many cases on record wherein an epilepsy in a child was associated with epilepsy in either one or both parents. For that reason patients with this condition are advised to continue treatment for a period of from three to five years following the last attack. In this way the pattern or habit of the convulsive state may be sufficiently depressed so as not to recur. All patients with epilepsy in the eligible age for matrimony should be absolutely warned of the possibility of having epileptic children. These patients before having any children, should have no attacks of any kind for a period of three years. It cannot be too strongly urged that any epileptic patient should not countenance matrimony unless the future mate is informed of the condition. If this is not done more trouble than the epilepsy may arise later.

MALIGNANT HYPERTENSION

To the Editor—I have under my care a patient with what has been diagnosed as malignant hypertension. He has been treated for the past two years for what was supposed to have been sinus headaches following tonsillectomy. The headaches were severe and occurred at increasingly frequent intervals. When he reported to me in the course of a routine physical examination the blood pressure was found to be 186 systolic 110 diastolic. An x-ray examination of the sinuses revealed that there was no evidence of a disease condition in the right frontal sinus that would account for the headaches. They generally come on early in the morning or early afternoon and are intense starting first over the left eye and gradually involving the entire left side of the head. The headaches have lasted for as long as thirty six hours. Blood pressure taken during the intensity of one of the attacks was 240/140. Accordingly he was sent to the hospital for a complete physical examination. X-ray examination of the head was negative. There was nothing suggestive about the remaining teeth. The heart showed moderate enlargement to the left. The vessels of the lower part of the legs showed some thickening and calcification. A metabolism test was within normal limits. The prostate was somewhat enlarged but not pathologic. Kidney function and routine tests were normal except for an occasional hyaline cast and a transient trace of albumin. Electrocardiographic tracings showed nothing remarkable. The blood pressure varied but while the patient was in the hospital under treatment averaged about 180/190 systolic and 110/120 diastolic. The patient is 46 years old weighs about 165 pounds (75 Kg.) having lost 20 pounds (9 Kg.) by diet does not drink or smoke has a florid complexion and the vessels of the temporal region are tortuous and dilated. During an attack this condition is marked and there is a marked cyanosis. There is a soft systolic murmur at the aortic valve transmitted into the neck present only during attacks. The Kahn test is negative. The family history indicates only that his mother died at the age of 60 of apoplexy. His past history is essentially negative. He has been in the U S naval service for twenty six years and yearly physical examinations indicate that his present condition has existed for only about a year. Previous yearly blood pressure readings have not been over 132/96. He is active and until his daily routine was curtailed played golf, hunted and enjoyed outdoor activities. If I am correct in my diagnosis having tried to rule out all sources of focal infection I should like to have your advice as to whether or not you consider this case to be one that would be amenable to operative intervention with the sympathetic nerve supply. Recent literature indicates that certain beneficial results are being obtained along these lines and I should like to give my patient the benefit of the best accepted treatment. At present he is much improved so far as the headaches are concerned and although the systolic pressure now reads between 160 and 170 the diastolic pressure rarely goes below 110. I might add that his eyeground examination has showed very slight involvement.

MC Virginia

ANSWER—The family history suggests that the mother also had hypertension. This is a common observation and has no significance with regard to possible surgical intervention. Numerous surgical procedures have been advocated for the relief of this condition, probably the most successful being resection of the greater lesser and least splanchnic nerves. This operation has been performed on more than 250 patients in one clinic, with more than half of the patients receiving marked improvement symptomatically and with maintained drops in systolic blood pressure of 50 points or more. Fifteen per cent are classified as tentatively cured as they have had maintained normal pressure of at least one year postoperatively and all evidence of renal and ocular damage has disappeared. About 75 per cent have symptomatic relief even though the blood pressure is not lowered. These results are more favorable than have been reported following any purely medical regimen. Therefore, operation is probably indicated in this case. The contraindications to splanchnicectomy are age over 50 a decompensated heart and a nonprotein nitrogen in the blood over 45. If these contraindications are not present, the patient would seem to have better than a 50 per cent chance of showing gratifying improvement.

CHRONIC ULCERATIVE COLITIS

To the Editor—The type of colitis in this case is due to an organism called *Bargen's organism*. This type of colitis is amenable to treatment but it is sometimes complicated by a thrombophlebitis of the lower extremities. At the present time this case shows some evidence of inflammation of the veins in the left lower extremity. The condition at present shows some improvement over yesterday. It will be appreciated if you will send me any information you have on this condition both as to the causative organism and the complication mentioned.

STANLEY M GATES, MD Monticello Ark

ANSWER—Chronic ulcerative colitis (colitis gravis) is an infectious disease of the large intestine. Some observers believe that the invading organism is a diplostreptococcus. Such an organism can be frequently isolated from the rectal lesions or the patient's rectal discharges.

Part of the treatment has included the administration of some form of antigenic substance prepared from this type of organism. Further than that the condition should be treated as any severe, destructive infection. Many symptomatic measures may come into play. A generous high calory high protein type of diet as much rest of the bowel as possible,

and other measures of general upbuilding are indicated. A series of small blood transfusions are often helpful. Although rare, the occurrence of thrombophlebitis and even arterial occlusion has been known to occur as a complication of this condition.

BILATERAL ATROPHY OF OPTIC NERVES

To the Editor—I have a patient who is 45 years old and has been blind for five years from bilateral atrophy. Examination of the eyes reveals no irregularity of the pupils; also there is no segmented paresis. The pupils respond to light and in accommodation. All reflexes are good except the knee reflexes which are deep but respond normally. He is rather large or heavy weighs about 210 pounds (95 kg) and is 5 feet 6 inches (168 cm) tall. Examination of his heart with x-rays and the electrocardiograph shows it normal. He has no aches, pains, rheumatic trouble, headache or gastric disturbance. Romberg's sign and all other symptoms are negative. His blindness came on gradually; in fact one eye was blind before he knew anything was wrong with him. He says he never has had any syphilitic lesions and cannot find any evidence of such infection; there is no scar on any part of his person. He has been a rather hard drinker just occasionally not a persistent drinker. He went out with some of the boys but did not drink regularly—just for a night. What is your opinion as to the cause of the optic atrophy? An early reply would be appreciated.

M D, Arkansas

ANSWER—The information included in the question is wholly inadequate to make possible a specific answer. However, it is probable that certain leads may be given that may make it possible to determine a cause for the condition.

The fact that the patient has been blind for five years and yet the pupils respond both to light and in accommodation is most unusual. Cases such as this have been reported and a review of the literature may be found in an article by S. R. Gifford and L. L. Mayer entitled "Retained Pupillary Reactions with No Perception to Light" (*Arch. Ophthalmol.* 6:70 [July] 1931).

Presupposing that the patient still has light perception, a visual field study is definitely indicated to rule out a possibility of interference with higher optic centers and the optic radiations. The fact that blindness came on gradually with one eye becoming blind before the other might indicate a lesion at the chiasm which because of its irregular growth involved one optic nerve before the other. Alcoholic amblyopia is usually seen in persons who are continuous drinkers in that they imbibe alcohol each day over long periods although the daily quantity may be small in amount. Atrophy of the optic nerve due to methyl alcohol poisoning is usually acute but there are so many complicating symptoms that a careful history would undoubtedly decide this factor. Syphilis of the nervous system with optic atrophy and a negative blood Wassermann reaction may be revealed on spinal puncture.

If all these measures are carried out it would seem reasonable to suppose that a definite diagnosis might be made.

RELATION OF TRAUMA TO PEPTIC ULCER

To the Editor—A patient suffering from an old (two years) peptic ulcer had just finished lifting and carrying about forty crates of apples to a truck when he suddenly felt faint and weak and had to be hospitalized for acute duodenal hemorrhage (the site of the ulcer). Can these repeated hernias involved in lifting the crates be responsible for the hemorrhage by direct repeated trauma against the abdominal wall or by the repeated increase and decrease in arterial or venous pressures involved in lifting heavy objects acting on a blood vessel already damaged by the ulcerous process? The last question is based on the idea of those hypertensive patients with arteriosclerotic (damaged) cerebral vessels who suffer from cerebral insult—hemorrhage—incidental to straining at stool. I would appreciate a list of references in the literature concerning only the possible relationship of trauma to a peptic ulcer with attendant hemorrhage.

HENRY ROSNER, M.D., Brooklyn

ANSWER—The relation of trauma to hemorrhage or acute perforation of a peptic ulcer known to be present, as well as to the genesis of the ulcer itself, has been the subject of much controversy as well as of great interest to forensic and industrial medicine. Clinicians of large experience in the field of gastro-intestinal diseases are convinced and have ample proof that hemorrhage may be induced by sustained or unusual exertion particularly severe exertion involving the abdominal muscles as in this case. Other known causes are violent abdominal massage and alcoholic sprees, especially the latter. Even sustained mental activity such as a lawyer may be subject to during an involved trial has been known to give rise to repeated hemorrhage in the same individual.

The mechanism involved is a moot point. Sudden rise in arterial or venous pressure in the splanchnic vessels marked though transient rise in intragastric or intraduodenal pressure and the great shearing strain on the movable parts of the bowel that adjoin fixed ones have been advanced as the factors underlying the hemorrhage. External nonpenetrating forms of trauma may cause laceration of the gastric mucous mem-

brane of variable extent giving rise to hemorrhage even in the absence of ulceration. So far experimental research has not contributed much to a better understanding of the factors involved. The literature on the subject is scanty and tends to minimize the importance of external trauma in the light of present knowledge.

The following references may be consulted:

- Stern, Richard. Ueber traumatische Entstehung innerer Krankheiten unter besonderer Berücksichtigung der Unfallbegutachtung. *Jena*. Gustav Fischer, 1930.
Berms, A. J. Some Industrial Aspects of Acute Perforation and Hemorrhage of Peptic Ulcer. *Ohio State M. J.* 32:130 (Feb.) 1936.
Eusterman, G. B. *Surg. Gynec. & Obst.* 42:161 (Feb.) 1936.

CHRONIC ULCER OF LEG

To the Editor—This condition while quite common is seldom encountered by the average practitioner. A woman aged 51 weighing 200 pounds (91 kg) height 5 feet 7 inches (170 cm) had phlegmasia alba dolens sixteen years ago, ten days after the birth of her first child. Pain began in the left inguinal region and extended rapidly to the foot at which point most of the inflammatory process was expended in red swelling terminating in exfoliation of the plantar cutis of the foot. Resolution left the skin about the ankle indurated; the scar tissue about the nerves and blood vessels adhered to the tibia causing pain. Since then this surface has been ulcerated from time to time healing with difficulty. Eight months ago a physician injected this scarred tissue with something that caused two necrotic ulcers at the point of injection which refused to heal. At this time active inflammation extended to the knee with a temperature of 105 F. The patient remained in bed for about thirty days. At present her general health is normal and she walks about on the leg even with pain which is not accelerated by exercise. The ulcers refuse to heal. The urine is normal (at times there is a trace of sugar). I am doing little in the way of treatment. A hot electric pad is used to keep the leg warm at night. Can you suggest something?

M D, Texas

ANSWER—The condition described by the correspondent is one of the most serious complications of chronic venous insufficiency that may follow femoral thrombophlebitis. The chronic cellulitis and fibrosis that result from this condition make the ulcers that may occur in such an area extremely resistant to treatment. In the particular case described it would be best to have the patient at rest in bed with the extremity elevated. If infection is present in the ulcer, this should be combated with the application of continuous packs of saturated solution of boric acid or a dilute solution of potassium permanganate (1:10,000). When there is a minimal evidence of infection some of the epithelial stimulants may be used. Of these the direct application of the leaf of the plant aloe vera or a dilution of thioglycerol is most satisfactory.

Skin pinch grafts may be successful. In some instances the evidence of the healing of these ulcers is so slight after the best of medical treatment that it may be wise to consider excision of the entire area and the covering of it with a full thickness skin graft. In other instances the patient will need to submit to the disability of the ulceration or, in extreme cases, amputation may be considered. If the ulcer can be healed it is necessary for the patient to wear a type of support that prevents venous stagnation, such as a pure rubber roller bandage, 3 inches wide and 15 feet long.

BILATERAL FOOT STRAIN FROM SHORT ACHILLES TENDON

To the Editor—A young woman suffers from a low heel arch apparently due to bilateral short achilles tendon. I have had the heels of her walking and gold shoes built up to 1 3/4 inches but the result has been that the shoes are now too heavy and since the shoes were not constructed for such high heels the longitudinal arch is not supported and the weight is thrown forward to the transverse plantar arch. Will you please tell me whether it will be necessary to have special shoes built or the name of manufacturers of such shoes with high heels which can be recommended. As this is only a trial to relieve the backache I hesitate to advise a special shoe being made because of the expense. Following the outline given by Mennell in his book on backache I have demonstrated that there is no strain or arthritis or fibrotic deposits present; it is a postural strain. The weight is normal. Any suggestions as to other treatment will be appreciated.

M D, G. C.

ANSWER—This patient apparently has a bilateral foot strain secondary to a short achilles tendon. It is desirable that the patient control her weight so as to relieve pressure on both feet. Rigid shank shoes, with moderate height Cuban type heels are the most satisfactory. These might be reinforced by longitudinal felt pads supporting the longitudinal arches. Such fitting should give much relief. In order to attack the basic etiologic factors it is necessary that the patient start calf stretching exercises and persist with them over a long period. This may be accomplished by having the patient start

in a slightly pigeon toed position, with the weight carried on the outer sides of the feet, and the toes flexed to the floor. The patient then leans forward without bending the knees or lifting the heels from the floor. If this is done properly the patient will experience a stretching sensation on both sides of the popliteal spaces. In order to accomplish the lengthening of the calf group, especially in an adult it is necessary that these exercises be carried out over a long period.

In some selected cases this may be accomplished by the lengthening of the achilles tendon. Although this surgical procedure is not severe the disability and awkwardness of gait may persist for several months after operation.

The use of arch supports may give temporary relief but are not effective in relieving the basic pathological condition. During recent years, many shoe manufacturers have developed perfectly satisfactory rigid shank shoes and in general these may be found as efficient as shoes made to individual measure.

TREATMENT OF SYPHILIS

To the Editor—A man aged 27 in excellent health contracted syphilis in September 1936 at which time I first saw him. He had a primary sore. Darkfield examination revealed the spirochete and the Wassermann reaction was four plus. Active treatment was immediately started. Up to now he has received fourteen injections of neorarsphenamine (0.6 Gm) and seventeen intramuscular injections of a bismuth compound. The primary sore healed within two weeks. No secondary lesions ever developed. The patient is exceptionally cooperative and intends to receive continuous treatment until January 1938. Three Wassermann tests taken at intervals have been negative. He will be married this spring. What is the likelihood for transmitting his infection to his wife and to his offspring? Provided the foregoing program is followed what additional precautions are necessary? MD New York

ANSWER—The patient with syphilis in the seropositive stage needs somewhat more treatment than a patient with syphilis in the seronegative stage. He should have at least forty injections of an arsphenamine and the same number of injections of a bismuth compound in alternating courses of continuous treatment. Distinctly better results have been obtained in cases in which no vacations are allowed that is, if no intolerance to treatment develops. This amount of treatment should be administered even with the negative serologic reports. There is little likelihood of infecting his wife with the amount of treatment before his marriage. They should avoid having children until the course is completed a negative spinal fluid is obtained and negative serologic reaction and absence of clinical manifestations for two years at least thereafter. Both husband and wife should of course be checked serologically and by physical examination from time to time both during and after treatment.

SUDDEN DEATH IN INFANT

To the Editor—I had a sudden death of an infant (18 months old) a few days ago which has me worried from a diagnostic standpoint. When first seen at 9 a. m. the infant had a temperature of 105 F with no abnormal lung conditions. The throat as well as the ears was normal. There was no stiffness or other indications of meningeal involvement. The mother says she only noticed that he was sick about 6 a. m. of the same day. I reduced the fever by cold bathing and acetylsalicylic acid. When seen at 5 p. m. the same day the temperature was 102 F but there were moist rales scattered over both lungs. The pulse was of good volume and about 100. I was called hurriedly at about midnight and found the child dead on arrival. The body was covered with purpuric spots from pea size to about that of a five cent piece. I would appreciate your opinion. MD Texas

ANSWER—There can be no doubt that it concerned some form of acute infection, probably with general bacteria. It would have required bacteriologic examination of the blood to determine the exact nature of the infection.

ALDRICH DYE MIXTURE FOR BURNS

To the Editor—Based on an opinion expressed by Dr Aldrich on the treatment of burns with a compound of aniline dyes (*Maine M J* 28 5 [Jan 1 1937] your advice to the inquiry of Dr Cantwell as published in *The Journal* September 4 p 813 is incorrect. Aldrich states in his latest article. In the two years following the introduction of gentian violet into Johns Hopkins the mortality dropped from 42% to 13%. However gentian violet was not the ideal antiseptic and contamination by gram negatives was a constant annoyance. The combination now employed by Dr Aldrich is acriviolet and brilliant green which he regards as the most powerful antiseptic against the gram positives that will not injure living cells. The solution employed is 1:1000 aqueous solution which has a high phenol coefficient against all the pyogenic organisms. Aldrich frankly states that this combination is not the final answer in the treatment of burns but he emphatically says that the new dye is as superior to gentian violet as gentian violet is to tannic acid.

F H JACKSON MD Houlton Maine

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in *THE JOURNAL* October 2 page 1147.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written examination for Group B applicants will be held in various cities throughout the country in April. Oral examination for Group A and B applicants will be held at San Francisco in June.* Sec Dr C Guy Lane 416 Marlboro St Boston.

AMERICAN BOARD OF INTERNAL MEDICINE *Written examination will be held in different centers of the United States and Canada Oct 15.* Chairman Dr Walter L Bierring 406 Sixth Ave Rm 1210 Des Moines Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written examinations and review of case histories for Group B candidates will be held in various cities of the United States and Canada Nov 6 and Feb 6. Application must be filed at least sixty days prior to these dates. General oral clinical and pathological examinations for all candidates (Groups A and B) will be conducted in San Francisco June 13-14. Application for admission to Group A examinations must be on file before April 1.* Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY *San Francisco June 13. All applications and case reports in duplicate must be filed at least sixty days before the date of examination.* Sec Dr John Green 3720 Washington Blvd St Louis Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Los Angeles Jan 14-15. All applications must be sent to the Secretary prior to October 15.* Sec Dr Iremont A Chandler 6 N Michigan Ave Chicago.

AMERICAN BOARD OF PEDIATRICS *Chicago Oct 17. Los Angeles Nov 7. Boston Nov 14. New Orleans Nov 20.* Sec Dr C A Aldrich 723 Elm St Winnetka Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY *New York Dec 28 (tentative).* Sec Dr Walter Freeman 1028 Connecticut Ave N W Washington D C.

AMERICAN BOARD OF SURGERY *Part I (written) Oct 20.* Sec Dr J Stewart Rodman 225 S 15th St Philadelphia.

Michigan Indorsement Report

Dr J Earl McIntyre, secretary, Michigan State Board of Registration in Medicine, reports 108 physicians licensed by indorsement from Jan 14 through July 28, 1937. The following schools were represented:

School	LICENSED BY INDORSEMENT	Year Indorsement Grad of
University of Arkansas School of Medicine	(1935) 2	Arkansas
College of Medical Evangelists	(1932) California	(1935) N B M Ex
University of California Medical School	(1935)	California
Yale University School of Medicine	(1932)	Connecticut
Loyola University School of Medicine	(1932)	
(1936) Illinois (1936) Wisconsin		
Northwestern University Medical School	(1898)	Wisconsin
(1930) (1933) Illinois (1936) Ohio		
Rush Medical College	(1932) Indiana	(1936) Illinois
School of Medicine of the Division of the Biological Sciences	(1936)	Illinois
University of Illinois College of Medicine	(1932) (1933) 3 (1935) (1936) 3	Illinois
Indiana University School of Medicine	(1928)	
(1931) (1932) (1935) (1936) Indiana		
State University of Iowa College of Homeopathic Medicine	(1918)	Iowa
State University of Iowa College of Medicine	(1919)	
(1933) (1934) (1936) 4	Iowa (1933) Kansas	
University of Kansas School of Medicine	(1933)	(1936) 2 Kansas
University of Louisville School of Medicine	(1936)	Kentucky
Tulane University of Louisiana School of Medicine	(1936)	Louisiana
Johns Hopkins University School of Medicine	(1936)	Maryland
(1931) New York		
Harvard University Medical School	(1925)	(1927) N B M Ex
University of Michigan Medical School	(1930)	(1933) N B M Ex
University of Minnesota Medical School	(1928)	N Dakota
(1935) Minnesota (1936) 2	N B M Ex	
Marion Sims Beaumont Medical College Missouri	(1903)	Illinois
St. Louis University School of Medicine	(1929)	(1936) 3 Missouri
Washington University School of Medicine	(1932)	(1935) 2 Missouri
University of Nebraska College of Medicine	(1934)	(1936) Nebraska
Cornell University Medical College	(1934)	(1936) New York
New York University College of Medicine	(1935)	(1936) New York
University of Buffalo School of Medicine	(1933)	Illinois
(1935) New York		
University of Rochester School of Medicine	(1934)	(1936) 2 Tennessee
Duke University School of Medicine	(1933)	(1936) Texas
Ohio State University College of Medicine	(1933)	(1936) 4 Ohio
University of Cincinnati College of Medicine	(1930)	Kentucky
(1931) (1933) 2 (1935) (1936) 2 (1937) Ohio		
Western Reserve University School of Medicine	(1927)	
(1931) (1934) (1936) Ohio		
University of Oklahoma School of Medicine	(1936)	Oklahoma
Hahnemann Medical Coll and Hosp of Philadelphia	(1924)	New Jersey
Jefferson Medical College of Philadelphia	(1932)	Ohio Pennsylvania
University of Pennsylvania School of Medicine	(1932)	New Jersey
(1934) N B M Ex		
Meharry Medical College	(1905)	Ohio
(1928) (1935) Tennessee		
Vanderbilt University School of Medicine	(1926) 2	Tennessee
Baylor University College of Medicine	(1936)	Texas
University of Texas School of Medicine	(1933)	(1936) Texas
University of Vermont College of Medicine	(1932)	Vermont
Medical College of Virginia	(1926)	(1933) Virginia
University of Virginia Department of Medicine	(1932)	(1933) Virginia
Marquette University School of Medicine	(1930)	(1932) Wisconsin
Wisconsin College of Physicians and Surgeons	(1906)	Wisconsin

Kentucky June Examination

Dr A T McCormack, secretary, State Board of Health of Kentucky, reports the written examination held at Louisville, June 9-11, 1937. The examination covered 11 subjects and included 110 questions. An average of 70 per cent was required to pass. Seventy-nine candidates were examined, 78 of whom passed and one failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
George Washington University School of Medicine	(1936)	85	
Loyola University School of Medicine	(1937)	79	
University of Louisville School of Medicine	(1936)	78	
(1937) 77 77 78 79 79 80 80 80 80 80 80			
80 80 80 80 81 81 81 81 81 81 81 81 81			
82 82, 82 82 82 82 83 83 83 83 83 83 83			
83 84, 84 84, 84 84 85 85 85 85 85 86 86			
86 86 86 86 86 87 87 87 87 87 87 87 88			
University of Cincinnati College of Medicine	(1937)	81 *	
81 * 82 * 82 * 83 *			
Woman's Medical College of Pennsylvania	(1936)	83 86	
Vanderbilt University School of Medicine	(1937)	83	
School	FAILED	Year Grad	Per Cent
University of Louisville School of Medicine	(1937)		

Nineteen physicians were licensed by reciprocity and one physician was licensed by endorsement from May 18 through August 24. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine	(1931)		Arkansas
American Medical Missionary College Chicago	(1904)		Wisconsin
Northwestern University Medical School	(1931)		Illinois
State University of Iowa College of Medicine	(1921)		Iowa
University of Kansas School of Medicine	(1934)		Missouri
Tulane University of Louisiana School of Medicine	(1936)		Louisiana
University of Maryland School of Medicine and College of Physicians and Surgeons	(1936)		Maryland
Cornell University Medical College	(1920)		New York
Felctec Medical College Cincinnati	(1936)		Ohio
University of Cincinnati College of Medicine	(1935)		Ohio
Western Reserve Univ. School of Medicine	(1929)		Ohio
Meharry Medical College	(1936)		Tennessee
University of Tennessee College of Medicine	(1936)		Tennessee
Vanderbilt University School of Medicine	(1921)		Tennessee
Medical College of Virginia	(1933)		Virginia
University of Virginia Department of Medicine	(1933)		Virginia

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Louisville School of Medicine	(1934)	N B M Ex	

* This applicant has received the M B degree and will receive the M D degree on completion of internship.

Tennessee June Examination

Dr H W Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held at Knoxville, Memphis and Nashville, June 17-18, 1937. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. One hundred and twenty-six candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Howard University College of Medicine	(1936) 82 8 84 1 84 4 85 85 3 85 3 85 5 85 6	(1935)	84 85 1
86 4, 86 5 86 5 88 89 3 (1937) 84 6			
Tulane University of Louisiana School of Medicine	(1937)	87 4	
Johns Hopkins University School of Medicine	(1934)	87 6	
St. Louis University School of Medicine	(1937)	83 5	
85 6 86 6 86 8 86 8 87 4 87 5 88 1			
Meharry Medical College	(1937)	80 3	
81 8 82 3 82 5 82 9 82 9 83 4 83 5 84 3			
84 3 84 5 84 5 84 9 84 9 85 3 85 4 85 4 85 4			
85 5 85 5 85 9 85 9 86 86 86 86 86 1 86 1 86 5			
87 87			
University of Tennessee College of Medicine	(1937)	81 4	
81 4 82 82 1 82 4 82 9 83 83 83 1 83 5 83 5			
83 8 84 1 84 1 84 3 84 3 84 5 84 5 84 5 85 85			
86 87 1 87 5			
Vanderbilt University School of Medicine	(1934) 86 6 (1936)	86 6	
(1937) 82 3 83 6 83 9 84 84 1 84 1 84 3 84 4			
84 4 84 5 84 5 84 6 84 9 85 1 85 3 85 3 85 4			
85 4 85 5 85 5 85 5 85 6 85 8 85 9 85 9 86 1			
86 1 86 1 86 3 86 3 86 5 86 5 86 6 86 6 86 8			
87 87 5 87 6 87 6 87 9 88 1			

Six physicians were licensed by endorsement from June 8 through August 24. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists	(1932)	N B M Ex	
Columbia University College of Physicians and Surgeons	(1929)	Mississippi	
University of Cincinnati College of Medicine	(1937)	Ohio	
University of Texas School of Medicine	(1932)	Texas	
University of Virginia Department of Medicine	(1934)	Georgia	

Book Notices

The Patient and the Weather By William F Petersen M D With the assistance of Margaret E Milliken S M Volume IV Part I Organic Disease Cardio Vascular Renal Disease Including a Chapter on Experimental Endocarditis By Alexander J Vedzel M D Associate Professor in the Department of Pathology Bacteriology and Public Health University of Illinois College of Medicine Chicago Cloth Price \$10 Pp 663 with 443 illustrations Ann Arbor Michigan Edwards Brothers Inc 1937

The present volume is only part I of the fourth volume of a complete set. How long it will be until this masterpiece of research has been completed, one can hardly tell. Single volumes and parts of volumes have been appearing from time to time for several years, and the end is by no means in sight. Volume II, volume III and part of volume I have already been reviewed in these pages, and a small picture of what the writer is trying to do has been presented. The vast amount of material collected by Petersen and his assistants can scarcely be expressed in words. In fact, this book is the type of thing which one is accustomed to find coming from European authors who, it must be admitted, have manifested little of the originality or of the clearness of thought that the present author has and match him only in quantity and in thoroughness. The influence of weather on human beings and on their bodily ailments has been ignored largely because of no obvious relationship but the presence of some such relationship is not beyond the acquaintance of even the layman. The soldier's old wound which pains him, the paroxysms of asthma that occur in certain times of the year regardless of pollen, and other interrelationships between weather and physiologic dynamics have been casually recognized but never understood.

It is not yet clear perhaps whether Petersen entirely understands this relationship, but he does have a theory which he is carrying consistently through all these massive volumes to point out that there are certain complexes related to high and low pressure which are accompanied by a certain chemical change. It would be fallacious to try to discuss this theory in brief any further than to make this single, simple statement. Polar fronts, temperature variations and other climatic conditions all seem to enter into the picture in an extremely complicated fashion. The earlier volumes which appeared seem to be a rather vague and yet earnest attempt to correlate such a broad external as the weather with vague, indefinite entities such as types of psychoses and neurologic conditions. Some evidence certainly was presented for an interrelationship. With continued writing and continued investigation the interrelationship is now becoming much clearer, and it must be admitted that the tenseness manifested by Petersen in the earlier volumes has now disappeared and some whimsy and other evidences of a feeling of greater security in his research are now manifested.

The earliest parts of the book deal with well known cases such as the death of Melvin Traylor, the president of the First National Bank in Chicago, and the Maguire case, the girl who for so many years was in a semicomatose condition. The fluctuations in these cases are shown to have a definite relationship with changes in climatic conditions. Numerous similar or closely related cases are culled from the literature and from the practice of physicians associated with the author to bring out his point further. And in this first part of the book the small charts used by Petersen to show the relationship of the various fluctuations in the patient's physical condition with the weather, being simpler than those in the last part and in previous volumes seem more dramatically and more emphatically to bring out his points. He concludes this section with a short discussion of what Aesculapius would say today if he were confronted with such an idea as Wilson's laryngeal constipation. Regarding the asthmatic condition which Wilson interpreted as being due to Freudian complex material but which the present author demonstrates in rather an interesting fashion to have a more clear-cut relationship with weather conditions he shows that when the most serious asthmatic attack occurred there was an extremely bad dust storm in the Chicago area. This discussion, which would be of interest to any earnest scientist, takes nearly a fourth of the contents of the entire volume the remainder being occupied with careful case studies of cardiorenal disease, showing the relationship of paroxysms

and changes in the cardiorenal function with changes in the weather. The volume ends with a discussion of experimental endocarditis produced in animals by Alexander J. Nedzel, who shows that there is a definite relationship between the author's "pressor" complexes and cardiac function. There are some beautiful micropathologic plates in this part, and the whole volume is, as are all the previous volumes, heavily interlarded with complicated graphs showing fluctuations in all the bodily functions in various cases during periods of climatic change.

Petersen shows why there is such an increase in acute cardiac and respiratory disorders in the month of March. The discussion here, which is a bit of cumulative evidence that fits in with the rest of the discussions in the volume, emphasizes Petersen's point that the unstable individual with low capillary blood pressure and a tendency toward acidity and other negative chemical changes is more susceptible to meteorological fluctuations. On investigating one's own attitude toward the subject, one would be inclined to agree with Petersen's results in general, but an evaluation of the immense amount of material which this huge volume encompasses had best be left with the investigator and reader himself and, perhaps, to time. The book cannot be recommended as light reading for an evening. It is unquestionably deep. It requires background both in meteorology and in medicine and pathology. But judging from important European literature, Petersen's work is undoubtedly the harbinger of a next major step in both theoretical and medical research.

La spondylolyse et ses conséquences. Spondylolisthésis—scoliose lit. thésique. Etude radiologique—clinique—médico légale. Par Pierre Glorieux et Carle Roederer. Paper. Price 60 francs. Pp 207 with 138 illustrations. Paris: Masson & Cie 1937.

This monograph is of manifest value as a roentgenologic study of lesions of the vertebral column. Spondylolysis is defined as a dissolution of continuity of the posterior vertebral arch between the superior and inferior articular facets. The "lysis" may traverse the base of the arch as it approaches the facet, the authors call this the intra-articular isthmus, often involved in spina bifida. In a comprehensive review of the literature, important developments are noted. The Eskimo race is apparently exempt from low back lesions. Willis and Schmorl microscopically found inclusions of cartilaginous islands at the base of the posterior arches in cases in which premature arrest of enchondral ossification led to incomplete bony fusion. The causes considered adequate to produce spondylolysis are congenital, traumatic, mechanostatic stress, degenerative processes, the osteochondritides, destructive bone diseases and tumors. Spondylolysis is a radiologic diagnosis. In the three-quarter oblique view an oval, "tear drop" shadow is noted at the isthmus, occasionally a V shaped defect is found in the anteroposterior view.

Spondylolisthesis is a major complication of spondylolysis. Prespondylolisthesis as described by Whitman is an undesirable term and is really a form of spondylolysis. In the roentgenogram the vertebra subjacent to the slipping one often shows spurs and the fifth lumbar vertebra at the anterior borders, especially inferiorly, has increased calcification. A good radiologic study includes an anteroposterior stereoscopic film in indistinct cases, a lateral film, an oblique film of from 45 to 70 degrees, which is usually best for demonstrating the posterior arch, and a three-quarters view to bring out the isthmus. The authors feel that early cases are best diagnosed in the anteroposterior film. Five diagnostic points are emphasized: 1. The spinous process and the arch of the involved vertebra are elevated, approximating the spinous process above the lateral view is negative. 2. The upper and lower vertebral borders are closer together owing to narrowing of the height of the involved body. 3. The projection of a bony line connecting the upper angle of the spinous process (across the posterior facies) with the base of the facet normally ends in the roentgenogram just below the pedicle, in spondylolysis it continues transversely across the body of the pedicle. 4. A gap or defect is visible even in the absence of slipping supporting the congenital theory of spondylolysis. 5. Ullmann's line in the lateral view may be negative and yet fail to rule out a moderate slipping.

Scoliosis is considered in this work only in its relation to spondylolysis. It may result even with a slight unilateral lesion.

It is often present in bilateral defects, chiefly because of the asymmetry of the lesions. The illustrations throughout the book are excellent. Each reproduction of a roentgenogram is accompanied by a pen and ink diagram. The detailed relationships are too complicated for review but are worthy of study by those interested in this field. The section on experimental radiology is exceptionally good and the authors are able to demonstrate the slightest bony defects. The sections on the medicolegal aspects and obstetric complications of spondylolysis are interesting but do not add materially to the value of the monograph.

Untersuchung über die Todesfälle an Krebs in den grossen Städten der Welt. Von Wilhelm Bohmert. Extrait du Bulletin de l'Institut International de Statistique. Tome XXX. Paper. Price 150 florins. Pp 71. The Hague 1937.

The author, commissioned by the International Institute of Statistics, has undertaken an extensive survey on the incidence of cancer in the large cities of the world, usually those of more than 500,000 inhabitants. It includes the United States and Canada, Argentina, Chile, Peru, British India, Japan, Egypt, the South African Union, Australia, New Zealand, and all the European countries except Yugoslavia, Turkey and Russia. The statistics cover the general incidence of cancer in five year age groups, separated according to sex. Only cancer of the oral cavity, the respiratory tract, the intestinal tract, the breast and the uterus are discussed separately. It is interesting to note the uniform age distribution of cancer in such heterogeneous populations as those in the United States and Japan. Also a comparison of the cancer deaths of the same population in different years shows a striking uniformity. The comparison of the death rate in the age groups between 40 and 60 years as it occurred in 1920 and in 1930 shows no regular trend. Although most cities show a relative decrease of the relative cancer mortality (based on 10,000 living members of the population between the ages of 40 and 60) some also show an increase. A few interesting figures are shown in the discussion of the distribution of cancer of the various organs in different populations. Japan shows by far the highest relative incidence of cancer of the digestive tract, followed by Norway and Czechoslovakia (in males 88.4 per cent of all cancers). In the Anglo-Saxon countries the incidence of cancer of the digestive tract is considerably lower (between 55 and 60 per cent). The reverse is true of the incidence of cancer of the breast: the highest incidence is in the Anglo-Saxon countries (from 17 to 27 per cent) and the lowest incidence in Japan (37 per cent in Tokyo). This study does not lend itself to a detailed review and only a few of the striking points could be stressed. It gives a complete tabulation, which should be studied in detail by those interested. The material is presented extensively, enabling one to compute some figures not discussed by the author. The general trend is critical, with emphasis on the possible pitfalls and the limits of conclusions which can be drawn from this material.

Electrocardiography. By Chauncey C. Maher, B.S., M.D., Assistant Professor of Medicine, Northwestern University and the Montgomery Ward Medical Clinics, Chicago. Second edition. Cloth. Price \$4. Pp 254 with 50 illustrations. Baltimore: William Wood & Company, 1937.

This edition is a vast improvement over the first, and most of the glaring errors present in the previous edition have been removed. The book is still unnecessarily involved for the purpose for which the author states it is intended. Further improvements would come from the use of (1) a less clumsy style, (2) a more distinct separation from the text of the electrocardiograms and diagrams so as to make it less difficult to follow the text, and (3) the use of original electrocardiograms instead of retracings, which give one a feeling of unreality and show inaccuracies in several places. A few of the errors present may be mentioned. On page 24 the author fails to note that there is a cylindrical lens in front of the camera aperture. On page 38 he fails to point out that 10 mm is equal to 1 millivolt. The auricular T wave mentioned on page 40 is not visible in the electrocardiogram (3) referred to. Electrocardiogram 11 would be considered abnormal by most authorities. Upper nodal rhythm is called auricular ectopic rhythm on page 71, whereas in electrocardiogram 17, illustrating this point, the correct diagnosis is made. The com-

plete auriculoventricular block present in electrocardiogram 23 is not mentioned, and the probable presence of digitalis intoxication is overlooked. The use of the terms supranodal and infra-nodal on page 88 is inaccurate. The premature contraction in electrocardiogram 26 is auricular and not nodal. Figure XXII is inaccurate, since it shows an RR interval after the second nodal escape longer than the RR interval between nodal beats. The P waves of the diagram in figure XXIII are incorrectly drawn. Electrocardiogram 30 is a poor example of wandering pacemaker. On page 108 the author fails to mention that ventricular fibrillation is sometimes a transitory phenomenon. The prolongation of QRS duration in electrocardiogram 37 is not mentioned. The significance given to slurring of QRS in indicating intraventricular block is misleading. The diagnosis of bundle branch block in electrocardiogram 40 would not be generally accepted. There is no evidence for the statement made on page 129 that right bundle branch block is more serious than left. The sinus arrhythmia in electrocardiogram 46 is overlooked. The diagnosis of left wall infarction on the basis of electrocardiogram 61 alone is unjustified.

Errors such as these give the impression that the text was carelessly written. In view of the many splendid books now available on electrocardiography, there is nothing to commend this one.

Über Veränderungen des Elektrokardiogramms bei orthostatischer Zirkulationsstörung Von Sven Åkesson Med Lic. Gott. Nation. Inauguraldissertation Aus dem Physiologischen Institut der Universität Uppsala. Aus Upsala Lakareforenings Förhandlingar N F Bd VII. Haft 5 6. Paper. Pp 383 499 with illustrations. Uppsala. Almqvist & Wiksells Boktryckeri A B 1936.

This monograph presents the results of a study of the electrocardiographic changes in persons with orthostatic circulatory insufficiency. Forty five such patients were studied and compared with 200 normal adults used as controls. The correlations were carried out on a mathematical statistical basis. In orthostatic circulatory insufficiency, the acceleration of the heart, the decrease in pulse pressure, the rise in diastolic and the fall in systolic pressures are greater than normal on standing up and symptoms of cerebral anemia are more frequent. The author concludes that there is a greater frequency of flattening and inversion of the T wave in leads 2 and 3 on assuming the upright position when there is orthostatic circulatory insufficiency than when this condition is absent. In addition to the T wave change, the ST becomes depressed. Immersion of two patients under water to counteract the effect of hydrostatic pressure prevented the occurrence of the electrocardiographic signs and other circulatory changes previously noted in these patients on assuming the upright position. In three of the seven cases in which fainting occurred on standing, the electrocardiograms showed evidence of vagus stimulation of the heart in the form of slowing and block. The author concludes that the circulatory changes in the heart responsible for the electrocardiographic alterations are the result of oxygen lack caused by the development of a relatively inadequate coronary circulation in the upright position. The monograph includes a good survey of the recent literature dealing with angina pectoris and coronary flow.

Trauma and Disease Edited by Leopold Brahm, B.S. M.D. Physician in Charge of Industrial Diseases and Accidents in the Office of the Corporation Counsel of the City of New York, New York City, and Samuel Kahn, B.S. M.D. Medical Examiner in the Bureau of Workmen's Compensation of the Department of Labor, State of New York, New York City. Cloth. Price \$7.50. Pp 613 with 9 illustrations. Philadelphia. Lea & Febiger 1937.

The contributors to this book are well chosen. They include Adair Woodruff, Abbott Crohn de Takats, Ebaugh Benjamin, Goetsch, Joslin Root, Marble, Knox, Kraus, Eloesser, Ottenberg, Pemberton, Pollock, Roberts, Solomon, Steindler, White and Glendy. The subjects discussed include heart disease, peripheral vascular disorders, pulmonary disease, gastrointestinal genito-urinary, obstetric and gynecologic diseases, mental disorders, diseases of the nervous system including neurosyphilis, bone diseases, chronic diseases of the joints, diseases of the spine, neoplasms, diabetes, disturbances of the thyroid glands and septicemia. The book is almost devoid of photographs, diagrams, charts and roentgenograms but is full of interesting theoretical and practical discussions. The pro-

fession should welcome the volume because it bridges the gaps between the clinical practitioner, the research man, the industrial and insurance doctors and the legal profession. Valuable and concise knowledge is provided for the specialist and should lead to better expert testimony and understanding in compensation and insurance problems.

Electrical Signs of Nervous Activity By Joseph Erlanger, Professor of Physiology, Washington University, and Herbert S. Gasser, Director of the Rockefeller Institute for Medical Research. Cloth. Price \$3.00. Pp 221 with 113 illustrations. Philadelphia. University of Pennsylvania Press. London. Oxford University Press. 1937.

This book is a model for conception, content and clarity in scientific exposition. Consisting of several lectures each by the two authors, there is a minimum of duplication and a maximum of factual and theoretical matter of real value to the serious student of the problem of nervous activity. The modern knowledge of the types of fibers in peripheral nerve is traced from its inception. The importance of the cathode ray oscillograph in the analysis of nerve action potentials is brought out, and the various characteristics of nerve fibers are described. The significance of the several phenomena involved in the action potential is discussed in the light of numerous experiments and finally the excitability cycle in peripheral nerve and in the central nervous system is described. The whole book is a detailed statement and review of the authors' original investigations and earlier research, with closely argued logical inductions. It treats of controversial subjects but not in the spirit of controversy. Reference is made to Claude Bernard's remark in his Introduction to the Study of Experimental Medicine that "When two physiologists quarrel, each to maintain his own ideas or theories in the midst of their contradictory arguments only one thing is absolutely certain: that both theories are insufficient and neither of them corresponds to the truth." The authors of this book deal with theories not so much to defend them as to use them for the prosecution of their problems. This is the most valuable book of the last ten years on the physiology of nervous activity.

Das Reizleitungssystem und die Nerven des Säugetierherzens. Eine anatomische, genetische und experimentelle Studie. Von Bernhard Wahlin, Med. Lic. Östg. Inauguraldissertation. Aus dem Histologischen Institut der Universität Uppsala. Paper. Pp 106 with 73 illustrations. Stockholm. Isaac Marcus Boktryckeri Aktiebolag. 1937.

This monograph includes some original work done by the author on the conduction system of the heart. He reports observations on the anatomic distribution of the conduction system in the beef, sheep and pig heart. He emphasizes the presence of the Purkinje system throughout the myocardium except in the upper parts of the septum around the first portion of the bundle branches and near the auriculoventricular groove. He describes in detail the connections of the bundle branches with the Purkinje system and stresses the presence of a Purkinje network in the lower part of the interventricular septum linking the two ventricles. While these observations have been made before they are not generally known. The author has confirmed the presence of an extensive nerve plexus surrounding the conduction system. He studied the development of the conduction system in beef embryos. He found that the auriculoventricular node is differentiated before the common bundle, its branches and the Purkinje net. The node comes from the auricular canal and the rest from the ventricular canal. The bundle branches become apparent histologically after the Purkinje net is fully developed. Nerve fibers are found to arise from both the arterial and the venous mesocardium, the former supplying the auricles and the latter the ventricles. The nerve fibers appear before the conduction system is differentiated. The monograph is concluded with a preliminary report of experiments in which cod liver oil given to two mice caused incomplete and complete degeneration respectively in the bundle of His. This was unaccompanied by nerve fiber destruction and was associated with no auriculoventricular conduction disturbance in the first animal and with a partial auriculoventricular block in the latter. From these data the author concludes that the auriculoventricular conduction is neurogenic and not myogenic. This last conclusion is unjustifiable since the results can be explained satisfactorily on a myogenic basis and it does not fit the mass of evidence now available in support of the myogenic nature of conduction. Myogenic conduction in the

mammal is now considered by most authorities to be a fact and not a theory. Except for the last section, the work presented fits in with and enlarges our knowledge of the development and distribution of the specialized muscular tissue in the mammalian heart, as the author points out clearly. Any one interested in this subject will find the monograph well worth reading.

Children Handicapped by Cerebral Palsy. Psychological Factors in Management. By Elizabeth Evans Lord Ph.D. Psychologist to The Children's Hospital Boston. With a medical explanation by Bronson Crothers M.D. Visiting Physician to The Children's Hospital Boston. Cloth Price \$1.25. Pp. 105 with 9 illustrations. New York Commonwealth Fund London Oxford University Press 1937.

This book discusses the psychologic factors in the management of children with cerebral palsy. It summarizes observations and experience gained over a nine year period during which 300 cases of cerebral palsy were studied. Dr. Crothers' medical explanation of the nature of the problem presented by these children constitutes the first chapter. Treatment by muscle training with special emphasis on the psychologic problems involved, and the prediction of physical efficiency are discussed. The most important sections of the book are those which describe the mental testing program by which the children were studied, and the subsequent discussion of the mental development of the children and their specific educational needs. Dr. Lord shows how it is possible for a skilled psychologist to arrive, through repeated examinations at a reliable estimate of the handicapped child's mental development, in spite of the fact that his physical difficulties obscure the picture and make it impossible to apply the usual tests in the usual manner. The author properly lays the greatest emphasis on adequate prediction of the mental growth and development of the children, since this is essential to the construction of a rational educational program. The unevennesses and irregularities in the mental development of the child suffering cerebral damage are described. Dr. Lord discusses the special problems with which the teacher of the handicapped child is faced. The final chapter deals with the emotional problems created for child and for parent by the presence of physical handicap with particular emphasis on the difficulties created by lack of proper evaluation of the child's potentialities and misguided or mistaken efforts to achieve goals not possible to the child. Dr. Lord has written in simple language and with the greatest of clarity. This is an authentic and important study with which every physician and teacher responsible for care of physically handicapped children should be familiar.

Opuscula selecta Neerlandicorum de arte medica. Fasciculus quartus decimus quem curatores miscellaneorum quae vocantur *Nederlandsch Tijdschrift voor Geneeskunde* collegerunt et ediderunt. Amstelodami Sumptibus Societatis De Medicina tropica. [Selected Dutch Writings on Medical Art. No. 14. Tropical Medicine. On Some Natural and Medical Matters from the Indies. By Gullelmus Piso. Treatise on the Asiatic Leprosy. By Wilhem Ten Rhyne. Treatise About the Most Excellent Herb Tea. By Cornelis Bontekoe.] Cloth. Pp. 465 with illustrations. Amsterdam 1937.

This volume is the fourteenth in the notable series of selected Dutch medical writings published by the *Nederlandsch tijdschrift voor geneeskunde*. It deals with the life and work of three remarkable Dutch physicians in the seventeenth century, Willem Piso, Wilhem Ten Rhyne and Cornelis Bontekoe, parts of whose writings are printed in Dutch and in English, preceded in each case by a biographic introduction and commentary.

Willem Piso, 1611-1678 physician in Amsterdam, served as chief of the medical service in the Dutch colony in Brazil from 1637 to 1644. In 1648 his great work on Brazilian medicine was published "an exceedingly well executed wonderfully illuminated folio volume." In this book are described the uses of ipecacuanha in dysentery and a form of lues, known as 'bubas' or jaws which can be transmitted 'by the slightest touch.' In his introductory sketch of Piso M. A. van Andel concludes that "to Piso the honor is due of having first given clear directions" regarding the use of ipecacuanha as a specific remedy 'for one of the most daunted diseases of his time.'

The first two chapters of Ten Rhyne's Treatise on the Asiatic Leprosy, 1687, are reproduced. These chapters deal with the differences between the kinds of leprosy and with signs and symptoms. In his introduction D. Schoute tells that Wilhem

Ten Rhyne, born in 1649, took his doctor's degree in 1670 sailed for the East Indies in 1673 and served as director of the hospital for leprosy in Batavia.

In his interesting introductory sketch, De Feyfer characterizes Cornelis Bontekoe, 1647-1685, as "an idealist, a problematic and troublesome companion, a spoilsport, his life was continually a source of conflicts, in short he belongs to the schizothymic type." His merit is to have introduced "the general use of tea, coffee and cocoa in the Netherlands and Germany. About 345 pages are occupied with the reproduction of his treatise on tea (1678).

Cataract. Its Preventive and Medical Treatment For Specialists General Practitioners and Students. By A. Edward Davis A.M. M.D. Consultant Ophthalmic Surgeon New York Post Graduate Medical School and Hospital (Columbia University). Cloth Price \$3. Pp. 161. Philadelphia F. A. Davis Company 1937.

The author, after discussing the history and etiology of senile cataract, takes up in order the symptoms of incipient, immature and mature cataracts, and their pathogenesis and spectroscopy. This is all a review and nothing new is contributed. Under treatment he first discusses errors of refraction and dietary treatment. In chapter X, on other methods of nonoperative treatment of cataract, he enumerates the use of various drugs, vitamins, endocrine preparations and lens antigen in which he is most interested and with which he is most concerned. He gives a series of case reports in which he endeavors to prove that with the use of lens antigen the cataract in the second unoperated eye was either arrested or partially absorbed with maintenance or improvement of vision. He cites the experience of other observers who differ with him in their conclusions as well as those who support his views. The book does not contribute anything new to our knowledge of cataracts or their medical treatment and the case reports do not conclusively show either arrest or definite improvement or clearing of lens opacities.

Der Myokardinfarkt. Erkennung, Behandlung und Verhütung. Von Professor Dr. Max Hochrein Oberarzt an der Medizinischen Universitätsklinik Leipzig. Kreislauf Bücherheft. Herausgegeben in Verbindung mit der Deutschen Gesellschaft für Kreislaufforschung. Band I. Paper. Price 12.50 marks. 1 p. 196 with 52 illustrations. Dresden & Leipzig Theodor Steinkopff 1937.

In this monograph the author has correlated the recent developments of the subject of myocardial infarction. This condition, as the author points out in his introduction, is a leading cause of death and consequently deserves the attention of every practicing physician. After an introduction in which the historical background is surveyed the author summarizes the frequency of infarction in his clinic during the last seven years and correlates it with the reports of other observers. A section on the hemodynamics of the coronary circulation follows, starting with the anatomy of the coronary arteries and including the normal and pathologic physiology, experimental studies on closure of the coronary arteries and the gross morbid morphology and histology of infarction. The rest of the monograph is devoted to the clinical consideration of infarction. This includes the etiology, the clinical picture, the typical symptomatology, the atypical forms of the disease, its usual course, its diagnosis and its prognosis. The treatment and prophylaxis of this disease are dealt with at length. An extensive bibliography is appended. While the author correlates his own observations with those of others this is not done at the sacrifice of simplicity of style. There are, of course, a number of points of view expressed by the author with which American authorities would disagree. The electrocardiograms are not adequate and could for the most part have been omitted. No precordial leads are presented and this aspect is rather lightly dismissed.

Physiology and Pathology of the Heart and Blood Vessels. By John Piesch M.D. L.R.C.P. & S. Professor of Internal Medicine in the University of Berlin. Cloth Price \$5.25. Pp. 188 with 15 illustrations. New York & London Oxford University Press 1937.

This book is a study of the hydraulics of the circulation in health and disease and as such lays no claim to the completeness of a textbook. The author attempts to analyze the normal and pathologic relationships of the various parameters of the circulation wherever these could be treated on a purely physical basis. For this purpose various mathematical formulas have been included and applied wherever possible. The author

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stresses the "genuineness" of the views presented and hence almost no references are given. The text introduces many new terms, such as specific dilatibility, systolic and diastolic insufficiencies and force limit, in describing well known cardiodynamic events. These terms, while descriptive, are no particular improvement over those more commonly used. In places, especially in the discussion of venous pressure, on which much stress is laid, the choice of words is confusing and the subject would be much clearer through the substitution of charts for words. There are numerous views presented to which many physiologists will take issue, such as that during auricular systole there is a large back thrust of blood into the great veins, that in aortic insufficiency there is neither an increased systolic discharge nor hypertrophy of the left ventricle, and that contraction of cardiac and skeletal muscle does not impose any serious impedance to blood flow through the muscle. Such views appear to arise from the author's expressed idea that "changes in the circulation of a mechanical nature do not need experimental corroboration." In general the organization of material is good and the book is well written, especially the chapters on circulatory insufficiency. However, the whole text could be greatly condensed without sacrifice of clarity. Despite limitations some of which have been mentioned, the book will be well worth reading if the reader will bear in mind that the author emphasizes theoretical deductions rather than experimental observations.

Your Diet and Your Health By Morris Fishbein M.D. Editor The Journal of the American Medical Association. Whittlesey House Health Series. Morris Fishbein M.D. editor. Cloth Price \$2.50 Pp 298 New York and London Whittlesey House McGraw Hill Book Company Inc 1937

This is a most readable book on foods and diet, a book which contains an extraordinary amount of information. It includes discussions of calories, the cost of food, the physiology of appetite and digestion, the components of our diet, the nutritional value of foods in general, food sensitivities, the diet in various disease conditions, and peculiar schools or "systems" of dieting. There is appended a considerable amount of tabular material regarding diets and food values in terms of carbohydrate, protein and fat. There is a suitable index. Practical suggestions are included in every chapter and the book is a useful guide to those who wish to "eat for health." Humorous touches deftly applied render the scientific facts mentally digestible. The book is dedicated to Anna Mantel Fishbein, "whose culinary accomplishments," writes the author, "in the younger years of my married life and whose graduate studies in this field in later years have maintained a constant war between my weight and my appetite."

Technique of Underwater Gymnastics. A Study in Practical Application By Charles Leroy Lowman M.D. F.A.C.S. Chief of Staff and Director of Educational Activities Orthopaedic Hospital Los Angeles California. Susan G. Roen Director of the Physical Therapy Department Orthopaedic Hospital Los Angeles. Ruth Aust B.S. and Helen G. Paul B.S. Sponsored by Los Angeles Orthopaedic Foundation. Cloth Price \$3 Pp 276 with illustrations Los Angeles California American Publications Inc 1937

This book offers a modern basic survey of the history, the theory and the conditions suitable for hydrogymnastics. It includes also four valuable chapters on the use of corrective aquatics, which are especially timely. Practical suggestions on the construction of physical therapeutic pools and their physical equipment as well as administration and departmental arrangement are included. Dr. Lowman successfully employs underwater exercise in certain postoperative cases, in cases of arthritis infections and open wounds fractures and poliomyelitis and in spastic patients. The book will be found instructive by all who deal either directly or indirectly with specific problems of posture or health.

Joint Range Chart to Show the Range of Motion of the Joints of the Extremities Paper Price 25 cents Harrisburg Pennsylvania Medical Society of the State of Pennsylvania [1937]

This pamphlet contains seventeen illustrations, which attempt to simplify terminology with regard to the range and direction of movement of certain joints. The illustrations are not particularly good.

Workmen's Compensation Acts Compensability of Sacro-Iliac Strain—The workman was employed in the warehouse of the National Biscuit Company moving barrels and other articles of merchandise. He stooped to reach a barrel and was seized with a sharp pain in his back and left leg. Temporary total disability resulted. The state industrial commission made an award in favor of the workman, and the company instituted original proceedings in the Supreme Court of Oklahoma to obtain a review of that award.

Under the workmen's compensation act of Oklahoma, an employer is required to pay compensation for disability resulting from an accidental personal injury sustained by an employee when it arises out of and in the course of employment. In the present case the medical testimony was to the effect that the workman suffered a "right sacro-iliac strain and sciatica and was temporarily totally disabled from performing ordinary manual labor." The question presented to the Supreme Court was whether or not under the circumstances the workman sustained an accidental injury within the meaning of the workmen's compensation act. An examination of cases previously decided in Oklahoma, said the court, discloses that where a finding of accidental injury has been sustained there has been evidence to the effect that it was the result of some external cause although there was no trauma or external manifestation of injury. In the present case the court was asked to go a step further and to hold accidental a muscle strain which according to the evidence happened apparently without cause other than the act of stooping over to perform work. In other words, the court was asked to say that an act which required no unusual exertion, which presented no sudden strain on the workman's muscle but in every way was the normal and usual function of his body except for the resulting disorder, should be deemed an accident. If we should so hold, the court continued, we must be prepared to hold that every muscle or nervous strain which an employee sustains and which results in a disability is accidental regardless of any apparent external cause or stimulus producing such condition. So to hold would in effect nullify rather than construe the provisions of the workmen's compensation law. The most that can be said of the workman's evidence, the court concluded, is that he sustained a "muscular strain" for no apparent reason except that he stooped over. To say that it was accidental merely because it was unexpected would be to authorize a judgment based on conjecture, surmise and speculation. Under such circumstances the court concluded that there was no competent evidence before the commission on which to base its findings of accidental injury and that therefore the commission was without jurisdiction to make any award. The award of the commission was vacated for want of any competent evidence to support it—*National Biscuit Company v. Lout (Okla.)*, 65 P. (2d) 497.

Hospitals Hospital Bills Accorded Priority in Payment out of Insolvent Patient's Estate—In North Carolina the debts of a deceased person are classified by law for the purpose of determining the order in which they are to be paid. Claims "for medical services within the twelve months preceding the decease" form a part of the sixth class. All other debts, not included in the preceding six classes are embraced in the seventh class. The defendant was the executor of a decedent who during a portion of the last twelve months of his life was hospitalized in a hospital operated by the plaintiff association. An expense of \$655.60 was incurred for a private room, drugs, special laboratory examinations, use of the operating room, board for graduate nurses and meals for the decedent's wife. The decedent's estate was insufficient to pay all debts. If the plaintiff's claim was allowed priority under class six, as a claim for "medical service," the estate was sufficient to pay it in full. If the claim was properly classified

as included within the seventh class of the decedent's debts, the plaintiff would receive approximately 57 per cent of its claim. The executor refused to accord priority to the claim, and the plaintiff sued. The trial court held that, with the exception of the amounts due for the board for nurses and for the meals furnished the decedent's wife, the claim should be classified for payment as included within the sixth class. Both the plaintiff and the defendant appealed to the Supreme Court of North Carolina.

In speaking of the statutory preference of a debt incurred by a decedent for medical services rendered him within twelve months preceding his death, said the Supreme Court, it was said in *Baker v. Dawson*, 131 N C 227, 42 S E 588:

It must be noted that there is no priority even for medical services rendered the deceased personally unless he dies. In all other cases the physician's bill is like any other debt. If the physician wishes to secure such debts he must exact security or proceed to collect by law. When the patient is in his last illness this might be inconvenient or indecent and as such illness might extend to twelve months the law endeavors to secure for the patient medical attention by giving a legal priority for such services if rendered to the patient within twelve months preceding his decease. But such reason does not apply to services rendered his wife and children as to which the physician has extended credit relying upon the father or husband or landlord himself paying the debt incurred. There are no words extending the meaning to such debts other than personal services to the debtor and the language of the statute is restrictive. — For medical services within twelve months prior to the decease — meaning the decease of the debtor not of his wife, child or tenant. The statute being in derogation of the equity of a pro rata distribution should be strictly construed so as not to confer a priority over other creditors unless clearly called for.

With the principle applied in the Baker case, the Supreme Court of North Carolina expressed itself as in agreement but held that that principle did not require such a restricted construction of the words "medical services" as to exclude from the provisions of the statute services rendered by the plaintiff to the deceased within twelve months preceding his death. These services were rendered on the advice of decedent's physician and were reasonably necessary, because of his illness, for his care and comfort. When the plaintiff admitted the decedent into its hospital, it doubtless felt assured, the court said, that if he recovered from his illness he would pay his hospital bill, and that if he died within twelve months from the date of his admittance it would have a preferred claim for its services on his estate. The words "medical services," as used in the statute, the court said, include all services rendered to the decedent, because of his illness, on the advice of his physician, which were reasonably necessary for his care and comfort, and for his proper treatment by his physicians.

In the opinion of the Supreme Court, the trial court erred in excluding from the provisions of the statute the amount due the plaintiff for board for the graduate nurses who attended the decedent. The evidence showed that it was necessary that these nurses should attend the decedent constantly and it was not only convenient but reasonably necessary for the plaintiff to furnish board for them. The judgment of the trial court, therefore, should have included the item charged for the board of such nurses. Subject to this modification, the judgment of the trial court was affirmed.—*Park View Hospital Ass'n Inc. v. Peoples Bank & Trust Co.* (N C) 189 S E 766.

Narcotics. Invalidity of Nevada Narcotic Drug Act Because of Insufficiency of Title.—Medeiros was charged with the unlawful possession of narcotic drugs in violation of the uniform narcotic drug act of Nevada and was imprisoned pending his trial. He applied to the Supreme Court of Nevada for a writ of habeas corpus, contending that the act was unconstitutional.

The Nevada constitution provides that "each law enacted by the legislature shall embrace but one subject, and matters properly connected therewith, which subject shall be briefly expressed in the title." The title of the narcotic act,

An Act defining and relating to narcotic drugs and to make uniform the law with reference thereto," violated the constitutional requirement, Medeiros contended, because it failed to set forth the subject sought to be legislated on in such a manner as fairly to give notice of the contents of the act. With this contention, the Supreme Court of Nevada agreed. The title of the act declares that the act relates to

narcotic drugs, and defines them, it does not express in what manner it relates to narcotic drugs. It does not indicate that the act prohibits the unlawful possession of such drugs nor does it indicate that the act in any way regulates their use. The state argued that the connection between the provisions of the act making it unlawful to possess narcotic drugs and the title "defining and relating to narcotic drugs" is obvious. This was so, it argued, because it is commonly known that it has been the public policy of the state of Nevada for many years to prohibit the use and possession of narcotic drugs by persons other than physicians, druggists and veterinarians who are limited in their possession and use of these drugs to professional use. On this account, it contended, the members of the legislature and the public could not have been misled by the title as to the subject-matter of the enactment. This argument, answered the Supreme Court, might have some force if the constitutional provision involved provided that the title must impart notice of the subject. But such is not the case. It provides that the subject shall be briefly expressed in its title and no presumption of knowledge will satisfy this command. The second part of the title, "and to make uniform the law with reference thereto," gives no validity to the title. It does not undertake to specify any particular law where the subject may be found, and even if it did, such reference would not satisfy the requirement of the constitution.

The narcotic act was enacted in 1933. The legislature, in 1935, undertook to amend the title. But, said the Supreme Court, if a law so conflicts with the constitution as to be entirely void there is nothing to amend. The action of the legislature, in 1935, therefore could not validate the narcotic act. In the opinion of the Supreme Court the 1933 act was entirely void and Medeiros was ordered released from custody.—*Ex parte Medeiros (Nev.)*, 64 P (2d) 346.

Dental Practice Acts. Complaint Framed in Terms of Statute Valid, Restrictions on Ownership of Dental Offices Upheld.—One Florence Williams was charged with practicing dentistry in Indiana without a license. In the trial court, a conviction resulted. An intermediate appellate court discharged Williams, and the state appealed to the Supreme Court of Indiana.

The dental practice act of Indiana provides that, in charging any person with violating the act, "it shall be sufficient to charge that such person did, upon a certain day and in a certain county, engage in the practice of dentistry, he not having a valid license so to do, without averring any further or more particular facts concerning the same." The affidavit in the present case conformed to this requirement. Williams contended, and the intermediate appellate court upheld the contention, that the foregoing provision was unconstitutional because it violated a constitutional guaranty that, in all criminal prosecutions, the accused shall have the right to demand the nature and cause of the accusations against him. The Supreme Court held, however, that the affidavit was sufficient as against the constitutional objection raised. The substantive offense charged by the affidavit was the practice of dentistry without a license. All or any of the acts set forth in sections of the dental practice act defining the practice of dentistry may enter into the substantive offense, but whether one or all of them do so, there is but one substantive offense, namely, practicing dentistry without a license.

The dental practice act further provides that any person shall be considered as practicing dentistry (1) who owns or operates a dental office or (2) manages or conducts a dental office or (3) engages in practices included in the curricula of recognized dental colleges. These provisions, Williams contended, were not within the police power of the state and therefore unconstitutional. With this contention the Supreme Court disagreed. The clause "or engages in practices included in the curricula of recognized dental colleges," said the court, was as much within the police power of the state to enact as any of the other provisions of the section defining the practice of dentistry. This clause does not refer to the subjects taught in the dental college, the court pointed out, but to those things which are practiced as provided in the curriculums, evidently meaning the things practiced in the dental clinic, such as opera-

tive prosthetic dentistry, crown and bridge work, inlay and orthodontia. Any person therefore engaged in such practice would be practicing dentistry. Furthermore, the court continued, the profession of dentistry is not a business but one of the learned professions. It is not a business where one can procure a room and a manager to run it. Before a person may practice dentistry, he must pass a rigid examination and secure a license. If a person alone, or an association of persons who fail to have the necessary learning to pass the dental examination, can own, manage and operate a dental parlor with a licensed dentist in charge, then all the statutes regulating the practice of dentistry would be of no effect. The standards and ethics of the dental office, the class of workmanship and the fee would be regulated by the owner or manager. The purpose of the dental statute, continued the court, is to prevent any person from practicing dentistry who is not duly licensed and qualified, and any person who is not so qualified can neither directly nor indirectly practice dentistry. If one who is not qualified and licensed to practice is permitted to select and rent an office and then employ licensed dentists to do the actual work, either on a commission or on a salary basis, he would certainly be doing a dental business and would be doing indirectly what he could not do directly.

Accordingly, the Supreme Court reversed the judgment of the intermediate appellate court discharging Williams—*State v. Williams (Ind.)*, 5 N E (2d) 961.

Optometry Practice Acts Employment of Licensed Optometrists by Corporation—The defendant corporation operated in connection with a retail jewelry store a department equipped for the filling of prescriptions for eyeglasses. This department was in charge of a licensed optometrist employed on a salary by the corporation. He ground lenses, repaired glasses, filled such prescriptions as were presented, examined the eyes of customers and issued prescriptions for those customers whose vision he found defective. He made no charge for the examinations or prescriptions and no obligation rested on the customer to have the prescription so prepared by the optometrist filled in the defendant's store. The Georgia board of examiners in optometry, alleging that under the circumstances the defendant corporation was engaged in the practice of optometry, filed a petition seeking to enjoin that practice. The trial court refused to grant an injunction and the board appealed to the Supreme Court of Georgia.

A corporation said the Supreme Court of Georgia, as such, cannot itself qualify or be licensed to practice optometry. The question to be determined, therefore, is not whether a corporation as a fictitious legal entity can practice optometry but whether or not the employment by a corporation of a licensed optometrist constitutes such practice of optometry as is inhibited by the optometry practice act. That act, the court said, was passed to protect the public health against injury or harm which might result if ignorant, unskilful or incompetent persons were permitted to offer their services as optometrists. It was not enacted to protect the interests of persons engaged in the practice of optometry. The court disagreed with the contention of the board that optometry was a "learned profession" comparable to medicine. In the opinion of the court, the corporation's method of doing business was neither inimical to the health and safety of the public nor was it prohibited by the optometry practice act. The court, therefore, could see no reason why the injunction should issue.

For the reason stated, the judgment of the trial court refusing to issue the injunction was affirmed—*Georgia State Board of Examiners in Optometry v. Friedmans Jewelers Inc (Ga.)*, 189 S E 238.

Lobar Pneumonia a "Bacterial Trouble"—Death from lobar pneumonia said the appellate court of Illinois, second district, is a death from "bacterial trouble" within the meaning of a benefit certificate issued by the Fidelity Mutual Benefit Association, which provided that one fifth of the usual benefits would be paid to a member of the association who died of a "bacterial trouble" within one year of the issuance of the certificate—*White v. Fidelity Mut. Benefit Ass'n (Ill.)*, 6 N E (2d) 271.

Society Proceedings

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American College of Surgeons Chicago Oct 25 29 Dr George W Cline 40 East Erie Street Chicago Chairman Board of Regents
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Central Association of Obstetricians and Gynecologists Dallas Texas Oct 14 16 Dr Ralph A Reis 104 South Michigan Blvd Chicago Secretary
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THE AMERICAN RHEUMATISM ASSOCIATION

Fourth Annual Meeting and Sixth Conference on Rheumatic Diseases
held in Atlantic City N J June 7 1937

LORING T SWAIM, M.D., Boston Secretary

(Continued from page 1155)

Surgical Reconstruction of the Arthritic Cripple

DR PHILIP D WILSON New York This paper deals with the whole problem of surgical reconstruction of patients crippled by chronic arthritis. The fact is stressed that surgery becomes necessary only when the arthritic process is inactive. These remarks are confined entirely to the atrophic or rheumatoid type of arthritis. Various obstacles and problems must be dealt with before a decision can be made as to how much can be done. Multiple operations are often necessary and the patient's general condition and morale are important factors. It is important to distinguish between the arm problem and the leg problem, and the solution of either of these problems is a justifiable end in itself. Synovectomy is indicated chiefly in cases of chronic effusion. Flexion deformities of the joints particularly of the knee are best dealt with by the author's operation of posterior capsuloplasty when the amount of articular damage is slight. The object of this operation is to loosen and lengthen the posterior capsular ligament. When there is much bony change in the knee the deformity usually requires correction by supracondylar osteotomy. There are arguments against fusion or ankylosing operations on the knee or hip in this disease because in general the results are not good. In painful joints with much articular damage as well as in ankylosed joints, regardless of whether the ankylosis is fibrous or bony, arthroplasty is recommended. Some helpless cripples can be restored to a fair measure of independence.

a result of multiple operations performed at different periods. Surgical reconstruction offers hope to a large number of such individuals who are at present quite neglected.

DISCUSSION

DR ROBERT B. OSGOOD, Boston. I agree completely with Dr. Wilson. The first factor to be emphasized is the original plan to see the thing through which Dr. Wilson has proposed, not only surgically but psychologically. The patient's physical condition must, of course, be good, and he must be brought mentally not only to a state of acquiescence but to a state of enthusiasm with a burning desire for these procedures. The whole program must be visualized by him. He must beg for these measures, as these patients often will if the proposition is put to them properly. The cooperation of the patient is as important as is the skill of the surgeon. A half normal capacity to the person who has been completely disabled is worth much more than a return to full capacity to a person who has been only half disabled. These patients will comprise a grateful group. Dr. Wilson's method of handling these handicapped patients is deserving of the intelligent attention of all those interested in chronic arthritis.

DR M. H. DAWSON, New York. We are all deeply appreciative of what the orthopedic surgeon does for the arthritic cripple. Anything that helps to make this type of patient more mobile is a great blessing. There is one group of patients to which Dr. Wilson referred that bothers me. I noticed in his chart that he had several cases of synovectomy. I should like to know what he considers the proper indication for this procedure in a patient with chronic arthritis. If he could give a five year follow up on a number of cases it would be helpful. One sees in the arthritis clinic from time to time patients who have had synovectomy many years before and it is difficult to assess the value of that procedure. I should like to get a definite opinion from Dr. Wilson.

DR JOHN P. STUMP, New York. Any one who has had a chance to see Dr. Wilson's excellent postoperative results cannot help being impressed. One of the important observations made by Dr. Wilson, I fear, might be lost, and this observation should be given more attention. It is the fact that a great many deformities are the result of patients not having proper orthopedic attention in the early stages of the arthritis. It should be emphasized that early orthopedic management is essential in treating arthritic patients if deformities are to be controlled.

DR PHILIP D. WILSON, New York. I did not have any synovectomies in my group. The sixty cases referred to were posterior capsulotomies. The number of synovectomies was small. I am no more enthusiastic about the operation of synovectomy than is Dr. Dawson. I believe one must select cases for synovectomy with great care. The criteria are first a low grade or quiescent stage of arthritis, second, absence of joint limitation, third, persistence of swelling of the synovial capsule, thickening or swelling with tenderness as a rule with a fat pad on the front of the knee, on either side of the patella or chronic effusion. I think the chronic effusion is perhaps the greatest indication of all. When a joint has had a large amount of effusion for several years, unrelieved by a great number of aspirations or other procedures, I believe that synovectomy may be done. I agree with Dr. Dawson that synovectomy is an easy operation and there is great danger that it might be done promiscuously without proper selection. I do not believe at all in the claim that has been made by a good many surgeons that with synovectomy one gets rid of the focus of infection which is located there and which may be the cause of further propagation of the disease in other joints. I have never seen any results to back up that statement. One often sees after any operation a marked general improvement. I do not know why it occurs. It is seen after tonsillectomy. If these patients get better function in the knee are more active and their general activity is improved they improve by increased function. They appear to be better. I think that is the reason many surgeons make the claim that synovectomy gives a general benefit. I think it is purely a theory.

Critical Evaluation of Vaccine Therapy

DR EDWIN P. JORDAN, Chicago. This paper will appear in full in THE JOURNAL.

DISCUSSION

DR RALPH H. BOOTS, New York. It is unusual to listen to a paper on vaccine therapy without the announcement of a higher percentage of cures. I think Dr. Hench is responsible for the expression "come depression or prosperity, it is a poor season indeed which does not present its vaccine of the year." Certainly with regard to osteo-arthritis there seems no excuse to employ vaccine therapy. Regarding rheumatoid arthritis, our waning enthusiasm is best illustrated by the number of patients we have treated with vaccine therapy during the various years in our clinic. Ten years ago we employed vaccine therapy in 90 per cent of our patients with rheumatoid arthritis, five years ago about 40 per cent, and the past year approximately 15 per cent, so that we are relying less and less on vaccine therapy and more and more on general treatment of the patient. The enthusiasm for vaccine therapy about equals that for gold salt or sulfur therapy. Occasionally just as we are about to give up vaccine therapy entirely we encounter a remarkable result which may be due to a natural remission of the disease, to psychotherapy or to vaccine itself, so we continue with a small number of patients who do not improve otherwise. Dr. Jordan sums up the situation when he states that the use of vaccine in rheumatoid arthritis still rests on pure empiricism.

DR WILLIAM K. ISHMAEL, Oklahoma City. Dr. Jordan's timely discussion on the use of vaccines in the treatment of rheumatism again brings up the question of whether or not the action of vaccines is of value. This question leads me to present the following observations, which, I believe, offer definite proof that high titer fractional doses of thoroughly autolyzed bacterial antigens originated from cultures of arthritic patients given intravenously in doses as small as a 1:100,000,000 dilution of the water soluble equivalent of one autolyzed bacteria, will provide the typical leukocytic drop seen in other types of allergy. This injection when used as treatment is designated vaccine therapy, but it has occurred to me that the term vaccine should be reserved for the first group described by Dr. Jordan. Some characteristic term for the high dilution antigens used in the hypersensitive types of arthritic patients should be adopted. I suggest the term "autolyzed arthritic bacterins." The criteria that I have used to determine cases suitable for this type of therapy are (1) sedimentation test for bacterial activity or allergic phenomena, (2) leukocyte count with the Schilling hemogram, (3) agglutination reactions and (4) the leukopenic index for the autolyzed bacterins. The latter group has proved so strikingly characteristic that I wish to record in this discussion the record of eighty successive rheumatic cases. My method of leukopenic testing is the same as described by Vaughn and Rinkel in allergic reactions on food. Simple venous puncture, injections of physiologic solution of sodium chloride and injection of a 0.3 per cent solution of phenol in saline solution were used as controls. Furthermore, the leukocytic response to infinitesimal doses of the autolytic arthritic bacteria serves as a valuable guide to the differentiation between atrophic and hypertrophic types. These observations help substantiate Dr. Jordan's suggestion that immunologic and hypersensitive reactions to bacterial by products are separate and distinct, and the method is proposed as a new way of studying the latter. The autolytic arthritic bacterins used were made from a stock antigen selected from arthritic patients, attenuated by a 0.3 per cent phenol solution in saline solution. The dilution starts with 2,000,000 per cubic centimeter and after complete autolysis has taken place diluted as low as the equivalent of one one hundred millionth organism per cubic centimeter. It seems incredible that such a high dilution should cause a drop in the leukocyte count from 2,000 to 6,000 per cubic millimeter, which would mean a demobilization of from 20 to 50 per cent of the white cells in the capillary circulation of the skin. The dose used to provoke the leukopenic response produced a clinical response in about 88 per cent of the positive cases characterized by a feeling of euphoria and decreased pain and swelling. I

believe that these observations indicate the need for further study of the use of the highly diluted autolyzed bacterins in our armament of rheumatic therapy

DR WALTER BAUER, Boston Dr Boots, in a previous paper, stated that one of the advantages in treating patients with rheumatoid arthritis with vaccines is that it brings the patients back to the clinic regularly, thus giving one the opportunity to observe the course of the disease, allowing for better supervision of the patient and the prescribing of any other sensible therapeutic measures In addition, one gets to know his patient's problems better

DR EDWIN P JORDAN, Chicago The main point I had in mind was that vaccine therapy is still in the experimental stage

Proliferative and Degenerative Arthritis

DR ROBERT M STECHER, Cleveland Most cases of arthritis can be classified into two types, the proliferative type, which is inflammatory in nature, and the degenerative type, which shows no evidence of inflammatory reaction Ordinarily they seem to be two separate diseases without definite relationship This paper consists of the reports of six cases of degenerative arthritis which develop in the same joints which previously had been the seat of proliferative arthritis The identity and characteristics of proliferative and degenerative arthritis from the clinical, laboratory, roentgenologic and pathologic standpoints are discussed The roentgenologic changes in these cases are demonstrated with lantern slides Degenerative arthritis seems to result from a wearing out process of the cartilage which is fostered by old age or injury In the cases described the patients had an inflammatory arthritis, which completely subsided, but not until sufficient damage had been produced to cause the development of degenerative arthritis This conception may help to explain some of the marked deformities occurring in degenerative arthritis which cannot be explained adequately on the basis of cartilage deterioration alone

DISCUSSION

DR RUSSELL L HADEN, Cleveland Dr Stecher has reported observations on six patients who developed hypertrophy of bone around a joint following an acute septic arthritis The gonococcus was the proved inciting organism in three cases and the presumable cause in the others In three, ankylosis was the end result The question he brings up is whether these observations throw any light on classic rheumatoid arthritis and osteo-arthritis Hypertrophy of bone develops not infrequently in rheumatoid or other types of infectious arthritis It is especially apt to follow a septic arthritis Here however, the bone changes are secondary to the infectious process and not to the primary change in the cartilage characteristic of primary osteo-arthritis One should thus distinguish between primary and secondary hypertrophic arthritis When this distinction is made I see no evidence of a direct relation between rheumatoid arthritis and osteo-arthritis It is true that rheumatoid arthritis in a person with osteo-arthritis will speed up the degenerative changes Still these are entirely separate diseases and, with the exception cited, the rheumatoid arthritis influences the osteo-arthritis just as any other entirely distinct disease might I am also doubtful whether an infection can have anything to do with the causation of malum coxae senilis This is a typical primary degenerative arthritis I have never seen a patient with this condition who gave a history suggesting a preceding acute septic infection of the hip If infection were a factor, the history should certainly be suggestive in some cases at least

DR WALTER BAUER Boston I think all will agree that changes in the hip joint such as Dr Stecher described may be the end result of any septic arthritis I think he should have chosen a title which would have implied that he was going to speak concerning the end results in three cases of proved and three cases of probable gonorrheal arthritis The title The Importance of Proliferative Arthritis as One Cause of Degenerative Arthritis is misleading A previous proliferative arthritis does allow for the development of degenerative joint changes at an earlier age than would otherwise occur

However, Dr Stecher was dealing with degenerative and proliferative changes secondary to a previous gonorrheal arthritis and not proliferative arthritis Proliferative arthritis is a synonym for rheumatoid arthritis—a distinct disease entity, in no way related to gonorrheal arthritis The pathology of proliferative or rheumatoid arthritis is quite distinctive and should not be confused with gonorrheal arthritis Employing the term proliferative arthritis for cases of arthritis due to the gonococcus only adds confusion to an already confused subject One should always so far as is possible adhere to an etiologic classification of the arthritides After seeing the roentgenograms presented by Dr Stecher, one fact should be clear, namely, that extensive degenerative and hypertrophic changes may develop rapidly in any joint which has been the seat of a septic arthritis If the roentgenograms of such patients taken some years after the initial infection should be examined, there might be great difficulty in interpreting them correctly They might be called malum coxae senilis, whereas they are not In such instances a good history will often be the most helpful single factor in arriving at the correct interpretation I have been much interested in cases of so called malum coxae senilis Dr Smith-Petersen has done acetabuloplasties in thirty such cases Review of the clinical cases reveals various causes, such as previous septic arthritis, rheumatoid arthritis, slipped epiphysis or fracture Such a study emphasizes the necessity of our trying to be as specific as possible in the terminology we employ when speaking of the type of joint disease and its pathology

DR M HENRY DAWSON, New York I would like to suggest that the roentgenograms submitted by Dr Stecher are not roentgenograms of true cases of malum coxae senilis The roentgenologic picture of malum coxae senilis is characteristic and can scarcely be confused with any other condition There are four essential features narrowing of the joint space especially well marked in the weight bearing portion of the joint condensation of the subchondral bone, the occurrence of cystic areas of degeneration in the head of the femur and adjacent acetabulum, and finally, marginal lipping The appearance is quite characteristic and is entirely different from that seen as a result of an old infectious process

DR ROBERT M STECHER, Cleveland I cannot agree with either Dr Bauer or Dr Haden that all these cases are gonorrheal arthritis Three of them certainly are The remaining three in my opinion, certainly are not I do not believe that such a diagnosis is justified in the complete absence of history or symptoms of gonorrhea The term proliferative arthritis is a pathologic designation and indicates an inflammatory type of joint reaction Although rheumatoid arthritis is a proliferative arthritis, the latter term is more comprehensive than the former and includes acute proliferative or inflammatory arthritis Dr Bauer says there is no evidence in these cases showing what changes can take place in the joints in years to come Certainly there is not, but I have shown the changes which did take place in two years Unless one takes a good history, he says, one might think that the condition was malum coxae senilis I believe the patients will have malum coxae senilis I do not believe that malum coxae senilis is a specific disease It probably arises under a variety of circumstances Dr Bauer and Dr Smith-Petersen believe it may follow slipped epiphyses or result from damage done by acute proliferative arthritis I have presented evidence which I believe supports the last half of this contention I do not agree with Dr Dawson that malum coxae senilis presents an appearance quite different from that seen as a result of an old infectious process The hip cases here presented are of comparatively recent origin Despite this fact, they show more or less decrease of space in the weight bearing portion of the joint and also marginal lipping Dr Haden places great weight on the distinction between primary and secondary hypertrophic arthritis This distinction seems to me to be of importance only so far as it aids in determining the cause of hypertrophic arthritis This disease undoubtedly results from various stimuli regardless of which the end result may be the same I have attempted to show that it may follow quite promptly after a proliferative arthritis which has subsided

(To be continued)

Current Medical Literature

AMERICAN

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Annals of Surgery, Philadelphia

106 161 320 (Aug.) 1937

- *Reduction of Intracranial Pressure in Cerebral Injury by Intravenous
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located Hip and Its Use in Paralytic and Pathologic Dislocations
A R Smith Iowa City—p 278

Reduction of Intracranial Pressure with Hypertonic Sucrose Solution.—Jackson and his associates selected stuporous or comatose patients who showed signs of contusion of the brain (increased intracranial pressure and bloody fluid), usually with fissured fracture of the skull, for decreasing the intracranial pressure by the injection of a 50 per cent solution of sucrose. The patients were placed in the lateral position with the head on a level with the spine. In restless patients, local procaine anesthesia is used for the introduction of the spinal needle. The Queclenstedt test is applied to determine the patency of the cerebrospinal system. The solution is injected slowly into the median basilic vein of the forearm in amounts of 100, 200, 300 and 400 cc. Readings are then repeated, with the spinal needle attached to the mercury manometer at varying intervals up to forty-eight hours. In eight cases of cerebral injury with severe trauma the average reduction in pressure was 50 per cent; the least reduction was 16 and the greatest 66 per cent. The reduction is maintained for six hours and in some cases for as long as twenty-four hours. From 200 to 300 cc of solution is necessary in most instances to produce

these reductions because sucrose has only one-half the osmotic pressure effect as compared to dextrose. In three severe cases there was no reduction; one of these patients was dying. In two cases there was an increase in pressure. A slight increase in pressure from 34 to 36 mm of mercury was caused by 100 cc of the solution after four hours. In the other case, 400 cc caused an increase from 11 to 16 mm of mercury after two hours. In both these cases, a reduction was afterward obtained by the withdrawal of cerebrospinal fluid. Compared to dextrose, the reduction in spinal pressure with the sucrose solution has been greater, in some cases up to three times that produced by dextrose. There has been no secondary increase in cerebrospinal pressure except in two instances and no toxicity, and the patients have been relieved of headache and restlessness with a few exceptions. No increase in the sugar content of the cerebrospinal fluid has been noted. Hypertonic sucrose solution may be used as an adjunct in those cases of severe edema of the brain in which spinal drainage is not successful, and in cases of multiple fracture of the pelvis or extremities in which spinal drainage may be difficult or impossible. In cases in which spinal drainage is not productive of a marked fall in pressure, the edema of the brain may be pronounced and the use of hypertonic sucrose may be of greater benefit. Sucrose acts by withdrawing water from all the body tissues into the blood, which in turn throws off both fluid and sucrose through the kidneys by an active diuresis. Similar withdrawal of fluid may be obtained with hydragogue cathartics.

Foreskins Used for Skin Graft Purposes.—Ashley maintains that, of the methods used to cover large denuded areas, not one is simpler than the use of circumcised prepuces. In any hospital having an active maternity service, one may obtain all the foreskins necessary. If desired as grafts, but not required immediately, they may be kept in physiologic solution of sodium chloride in a refrigerator or may be embedded in ice cubes. Successful results have been obtained with prepuces that have been kept in the icebox in saline solution or ice cubes for as long as two weeks. They can be used not only where thin skin is required but also where thick skin has been destroyed, e.g. on the sole of the foot, as the general tendency of any graft is to take on the characteristics of the skin in its new location. These grafts might be used for chronic ulcers and to cover amputation stumps. The author does not dispute the superiority of autografts over isografts. Nevertheless his experience with the use of prepuces has convinced him that they are well worth using. He suggests that all foreskins available be saved. To avoid syphilitic infection it would be wise to investigate the donors carefully although it is not very likely that the spirochete will survive when the foreskins are preserved.

Archives of Ophthalmology, Chicago

18 193 346 (Aug.) 1937

- Atrophy of Optic Nerve and Naevus Flammeus Associated with Heman-
gioma of Choroid. Report of Case P J Evans Birmingham Eng-
land—p 193
Jaw Winking Phenomenon. Report of Case C L Cooper Detroit—
p 198
Localization of Intra Orbital Foreign Bodies E W Spackman Phila-
delphia—p 204
Isolation of Verhoeff's Leptothrix in Case of Parinaud's Syndrome
R E Wright Madras India—p 233
Relationships Between Aniseikonia and Ametropia. From a Statistical
Study of Clinical Cases E H Carleton and L F Madigan Hanover
N H—p 237
Light Adaptation at the Macula. An Example of Its Industrial Impor-
tance E B Spaeth Philadelphia—p 248
Astrocytoma (True Glioma) of the Retina. Report of Case J M
McLean Baltimore—p 255
*Treatment of Caustic Burns of the Eye W B Hubbard Flint Mich-
igan—p 263
Primary Carcinoma of Lacrimal Sac C N Spratt Minneapolis—
p 267
Tuberculous Lesions of Uveal Tract. Review of Literature T H
Adler and G P Meyer Philadelphia—p 273

Caustic Burns of Eye.—In his experiments on rabbits with caustic burns of the eye Hubbard compares the effect of irrigation with water with the effect of irrigation with a weak neutralizing fluid. The caustics and irrigating solution were carefully measured and the time was regulated exactly by a stop watch. Between 80 and 100 per cent of the acid burns treated by irrigation with a weak alkali were definitely worse than the acid burn of the opposite eye treated by irrigation with

water alone. About 75 per cent of the alkali burns treated by irrigation with a weak acid were definitely better than the alkali burn of the opposite eye treated by irrigation with water alone. The observations substantiate the theory that a soluble alkaline proteinate does not protect against further injury, although an insoluble acid proteinate does. If sulfuric acid is a typical acid, an eye with an acid burn should be irrigated with water and not with a weak alkali. If sodium hydroxide is a typical alkali, an eye with an alkali burn should, when possible, be irrigated with a weak acid.

Archives of Otolaryngology, Chicago

26 127-238 (Aug.) 1937

- Unrecognized Complications Secondary to Peritonsillar and Lateral Pharyngeal Abscess. Case Reports. C. T. Porter. Boston—p. 127.
Esophageal Speech for Any Laryngectomized Patient. R. H. Stetson. Oberlin, Ohio—p. 132.
False Response to Jugular Compression (Tobey-Ayer) Test Due to Anomaly of Lateral Sinus. A. Hilding, Duluth, Minn.—p. 143.
*Disturbances of Taste of Otic Origin with Especial Reference to Operations on the Ear. W. Y. H. Ho. Shanghai, China—p. 146.
So-Called Primary Chondroma of Ethmoid. F. R. Menne and W. W. Frank. Portland, Ore.—p. 170.
Method of Closing Pharyngeal Fistula Following Laryngectomy. C. J. Imperatori. New York—p. 179.
Bilateral Pneumococcal Mastoiditis. Report of Case with Operation and Serum Treatment. M. Hyman. Cincinnati—p. 187.
Spontaneous Perforation of Wall of Chest by Aspirated Foreign Body. E. M. Seydell. Wichita, Kan.—p. 189.
*Use of Urea in Diseases of Ear, Nose and Throat. Preliminary Report. R. B. Lewy, Chicago—p. 195.
Paralysis of Facial Nerve. Report of Case. K. Hutchison. Montreal—p. 200.
The Paranasal Sinuses. S. Salinger. Chicago—p. 205.

Ageusia After Mastoidectomy.—Ho studied the disturbances of taste of otitic origin that occurred in patients from the otolaryngologic service of the Memorial Hospital, including four from the City Hospital of Worcester, Mass., from December 1936 to May 1937. Especial reference was made to patients who had had operations on the ear particularly radical mastoidectomy. In a group of twenty-one cases of acute disease of the middle ear there was no change in the sensation of taste, the reason being that the chorda tympani nerve was not affected either by the acute disease or by the surgical procedure. Of eighteen patients in whom chronic suppuration of the middle ear developed, changes in the sensation of taste were noticed in some and not in others. This difference depends on two factors—the resistance of the chorda tympani nerve to the infection and/or the effect of the pathologic changes of chronic otorrhea on the chorda tympani nerve. Many patients with aural cerumen have been questioned but not one person was observed with a positive change in the sense of taste. In the only case of ossiculectomy in which a follow-up study was possible, the patient showed a change in the sensation of taste on the anterior portion of the tongue corresponding to the side operated on indicating that the chorda tympani nerve had been injured owing to its close anatomic relationship to the malleus and the incus. In a group of seventeen patients who had undergone radical mastoidectomy in which the chorda tympani nerve was destroyed, the sense of taste on the anterior two thirds of the tongue on the side operated on was invariably absent. Loss of taste was present in the three cases of paralysis of the facial nerve following mastoidectomy. A change in the sensation of taste was present on the anterior portion of the tongue on the side operated on in two cases after modified radical mastoidectomy. This disturbance of taste, instead of complete ageusia, must be attributed to some change in the chorda tympani nerve. In cases of disturbance of taste of otitic origin the patient has no consciousness of any such change. Yet clinical tests of taste bring out the difference.

Urea in Diseases of Ear, Nose and Throat.—Lewy found a 2 per cent solution of urea beneficial in reducing metastases in certain types of infected necrotic carcinoma. Its value for infected wounds of the ear and throat and infected wounds of the neck and the floor of the mouth parallels the excellent results in the treatment of infected wounds in other parts of the body. Its specific effects seem to be elimination of odor, proteolysis of necrotic tissue and stimulation of granulation and epithelization. In order to observe its value as a therapeutic agent a more comprehensive study of this substance seems to

be indicated. From two to four cases of each manifestation are reported in which treatment was beneficial: carcinoma, Ludwig's angina, maxillary sinusitis, cervical adenitis, otitis media and mastoid wounds.

Delaware State Medical Journal, Wilmington

9 159-176 (Aug.) 1937

- The Loss of Infants in Delaware. A. C. Jost. Dover—p. 159.
Pneumonia in Delaware. S. Worden and J. R. Beck. Dover—p. 167.
Thoracoplasty. The Delaware Experience. L. D. Phillips. Marshallton—p. 164.
More Cases Are Consulting Physicians. W. E. Morris. Dover—p. 165.
Planning and Cooperation. R. C. Beckett, Dover—p. 167.

Indiana State Medical Assn Journal, Indianapolis

30 371-418 (Aug.) 1937

- Urologic Complications During Pregnancy. G. C. Prather. Boston—p. 371.
Banishing Diphtheria. K. C. Eberly. Fort Wayne—p. 380.
The Psychoneuroses. W. W. Eichelberger. Evansville—p. 382.
Complications of Artificial Pneumothorax. J. W. Strayer. Lafayette—p. 385.
Early Operation in Acute Gallbladder. F. Taylor. Indianapolis—p. 388.
Observations on Pulse Pressure in Coronary Thrombosis. W. M. Lochr. Versailles—p. 392.

Iowa State Medical Society Journal, Des Moines

27 399-450 (Aug.) 1937

- Comparison of Defects in Various Types of Anemia. F. H. Lamb. Davenport—p. 399.
General Surgery in Diabetes Mellitus. Report of Thirty Cases. J. B. Priestley. Des Moines—p. 402.
Diagnosis and Treatment of Vaginal Discharge. Nora Winther. Minneapolis—p. 407.
Fatal Menstrual Hemorrhage in Adolescence. J. S. Weinart. Des Moines—p. 410.
Progress in the Management of Paranasal Sinus Disease. G. C. Albright. Iowa City—p. 413.
Surgical Aspects of Obstetrics. J. C. Donahue. Centerville—p. 419.
Subcutaneous Rupture of Jejunum. H. F. Dolan. Anamosa—p. 423.

Journal of Immunology, Baltimore

33 87-172 (Aug.) 1937

- Blood Groups and MN Types in Mental Diseases. M. Hermann and I. N. Derby. Brooklyn—p. 87.
Role of Body Temperature in Experimental Typhus Infection. Generalized Rickettsial Infection of Peritoneum in Guinea Pigs, Rabbits and Sheep. M. Ruiz Cañaneda. Mexico. D. I. Mexico—p. 101.
Quantitative Changes in Antibodies and Globulin Fractions in Serums of Rabbits Injected with Several Antigens. W. C. Boyd and Helene Bernard. Boston—p. 111.
Contribution to Nature and Origin of Natural Agglutinins. Mabel S. Ingalls. New York—p. 123.
*Cutaneous Reaction of Rabbits to Pneumococcus Vaccines and Its Neutralization by Specific Antiserums. A. J. Weil and S. W. Phillips. Pearl River, N. Y.—p. 149.
Blood Grouping in Forensic Medicine. W. C. Boyd and L. G. Boral. Boston—p. 159.

Cutaneous Reaction to Pneumococcus Vaccines.—Weil and Phillips found that it is possible under certain conditions to evoke a reaction in the skin of rabbits by injecting killed pneumococci and that it is also possible to neutralize specifically such a reaction with antipneumococcus serum. Rabbits from 4 to 6 months old were used. A heretofore unknown property of the pneumococci is shown. The substance which evokes the cutaneous infiltration of rabbits is distinguished by qualities which make it necessary to assume that it is not identical with the type-specific polysaccharide. In contrast to the S substance, it is easily destroyed by moderate heat (from 56 to 60 C.) and it disappears, or is at least damaged, by the changes taking place as the culture becomes older. This substance ('irritating substance,') must be linked in some way with the specific soluble substance of Heidelberger and Avery, because it is neutralized quantitatively by the same antibody which is directed against the S substance. The existence of Boivin's hypothetical substance, which is not proved, would be a perfect connecting link between the knowledge of the S substance and the authors' observations, if what they call 'irritating substance' would be the antigenic complex postulated by Boivin. The S substance of the pneumococcus is not toxic and not antigenic as is the case with the polysaccharide of the Salmonella group when separated from the 'antigenic complex' by acid hydrolysis. Both the polysaccharide and the S substance of the pneumococcus determine the specificity of the whole complex and are precipitated *in vitro* specifically. The neutralization test is comparable to the neutralization in the skin of true toxins by antitoxic serum. The neutralizing effect of antipneumococcus antibody is of primary

tical use, because it presents a new method for the evaluation of serums. The infiltration reaction is prevented specifically when antipneumococcus serum is injected simultaneously with the vaccine. The neutralization is strictly type specific and allows a quantitative estimation of the antibody content within a range of ± 20 per cent.

Journal of Nervous and Mental Disease, New York

86 125 248 (Aug) 1937

- Relation of Motor Area of Primates to Hyporeflexia (Spinal Shock) of Spinal Transection J F Fulton New Haven Conn and G P McCouch Philadelphia—p 125
The Bible and Neurology in New Amsterdam T K Davis New York—p 147
*Exophthalmic Goiter and Psychosis I Bram Philadelphia—p 152
Fever Treatment of Dementia Praecox with Sulfur in Oil Especially with Reference to Acute Cases L B Shapiro and C F Read Elgin Ill—p 162
Mirror Behavior in Schizophrenic and Normal Individuals S Rosenzweig and D Shakow Worcester Mass—p 166
Analysis of Mitogenic Blood Radiation in Mental Disorder as Basis for Therapy S Brainsworth Leningrad U S S R—p 175

86 249 372 (Sept) 1937

- Art and Therapy in Mental Disturbances of Children Lauretta Bender New York—p 249
Concerning Pathology of Parkinsonism (Idiopathic Arteriosclerotic and Postencephalitic) Report of Fifteen Necropsies M Neustaedter and A F Liber New York—p 264
Paralysis Following Prophylactic Inoculation of Rabies Vaccine and Tetanus Antitoxin F G Lindemulder San Diego Calif—p 284
Art and Practice of Psychiatric Examination K E Appel Philadelphia—p 292
Youth Is in the Saddle F J Farnell Providence R I—p 312

Exophthalmic Goiter and Psychosis—Among more than 5 000 cases of exophthalmic goiter Bram obtained a history of psychosis in forty-two, chiefly of the manic-depressive type. Of the total number, twelve cases occurred in surgically untreated cases, the remainder in patients thyroidectomized months or years before. Of the thirty postoperative cases, the history pointed to the existence of the psychosis preoperatively in ten cases, while in the remaining twenty the psychosis appeared for the first time after discharge from the hospital. In all the postoperative cases, despite such residuums of exophthalmic goiter as moderate exophthalmos, tremor, moderate tachycardia with an irritable heart, insomnia and fatigability, the basal metabolism rate was not excessive, varying from plus 20 to minus 8 per cent. In not a single instance could the presence of a significant family history of psychosis be determined. Despite the coexistence of the two diseases, no definite causal relationship has been established between the two conditions. A psychosis may be superimposed on a preexistent exophthalmic disease, or exophthalmic disease may be superimposed on a preexistent psychosis. In either event the complication aggravates the prior malady and renders the clinical picture and the prognosis graver. In the event of a complicating psychosis in exophthalmic disease the psychosis becomes the major therapeutic problem, treatment of the exophthalmic goiter alone is usually futile.

Military Surgeon, Washington, D C

81 81 160 (Aug) 1937

- Yellow Fever—Yesterday Today and Tomorrow B J Lloyd—p 81
*Pathology of Lungs and Other Organs in Silicosis P B Matz—p 88
Prophylaxis of Asthma F J Yokoun—p 117
Gas Gangrene Treated by Ray Case T L Eyerly—p 118
Aviation Medicine and Its Strength Through Coordination G I Jones—p 122
Weak Foot as Disabling Defect Among Ex Service Men B W Harris—p 124

Pathology of Lungs and Other Organs in Silicosis—Matz determined the gross and microscopic changes of the lungs and extrapulmonary organs and tissues in twenty-three silicotic patients who came to necropsy in the hospitals of the Veterans Administration. It was thought that a study of the morbid changes in the silicotic patient might give information which would explain certain of the clinical symptoms and signs of the disease and its complications as well as the causes of death. 1 Involvement of the pleura may be the cause of the chest pain which is invariably present. 2 Fourteen cases presented evidence of an associated tuberculosis. In eight instances the two conditions were discernible as separate and distinct diseases and in six it was not possible to ascertain a separate background for either disease. The combined condition was

classified as silicotuberculosis. 3 Tuberculosis complicated the incipient as well as the advanced stages of silicosis. Extrapulmonary tuberculosis was a frequent accompaniment. 4 In five instances all lobes were affected, in two the disease was present in the right and left upper lobes, both lower lobes were affected in one case, the left lower lobe was affected in one case, in five the distribution of the tuberculous disease was in one or both upper lobes as well as in the right middle or in one of the lower lobes. 5 Only eight of the twenty-three cases gave evidence of emphysema. 6 Chronic lymphadenitis was found in eleven of the twenty-three cases, the tracheobronchial lymph nodes were affected in nine cases. 7 Disease of the liver was present in fourteen cases, three showed evidence of hypertrophic cirrhosis. 8 In twelve instances disease of the spleen was present—six showed the presence of chronic splentitis. 9 The cardiovascular system was a frequent site of disease. Hypertrophy of dilatation of the heart, or a combination of the two conditions was observed in eighteen necropsies. 10 Cardiac hypertrophy and/or cardiac dilatation was found in the early as well as in the advanced stages of silicosis. 11 Cardiac hypertrophy and/or dilatation was found in silicosis complicated by tuberculosis. 12 Arteriosclerosis of the aorta was present in nine of the twenty-three cases, in five of the nine cases there was concomitant cardiac hypertrophy or dilatation. The average age of the group was 52.8 years. 13 Chronic passive congestion of the various organs, which was due to cardiac failure, was observed in fourteen cases.

New England Journal of Medicine, Boston

217 241 290 (Aug 12) 1937

- Renal and Dermatologic Complications of Gonococcal Infections W W Spink and C S Keefer Boston—p 241
*Migraine Syndrome: Comments on Its Diagnosis, Etiology and Treatment T J C von Storch Boston—p 247
Some Thoughts on Osteopathy S Rushmore Boston—p 267

Migraine Syndrome—Von Storch suggests that, in reporting cases of migraine, utilization be made of the four cardinal components of the syndrome: recurrent headache, preferably but not necessarily hemicranial in type, associated visual symptoms, classically scintillating scotomas, temporary gastrointestinal phenomena, usually nausea or vomiting, and hereditary migraine diathesis, occasionally an epileptic history. No single pathologic process nor its presumed mechanism will explain conditions observed in an entire group. On the other hand, any one of the allergic, colonic, endocrine, duodenal, hereditary or psychic processes may be the primary factor in certain cases. In other words, each etiologic factor appears to be reasonable for a selected group, but none for an entire series. It would seem, therefore, that the underlying pathogenesis of the migraine syndrome is multiple. A mechanism which may be common to all types of migraine is dilatation of the dural and possibly temporal arteries with consequent stimulation of their periarterial plexuses. This seems to be the only mechanism related to the common symptom headache. Ergotamine tartrate is the most efficient non-sedative means of aborting or terminating individual attacks of migraine. Prevention of the attacks depends on determination of the underlying pathologic condition present in each individual case.

New York State Journal of Medicine, New York

37 1419 1478 (Aug 15) 1937

- Aims of a Cancer Group W E Howes Brooklyn—p 1419
Gastric Roentgenologic Changes in Deficiency Disease: Response to Treatment I G MacDonald Cornwall A F Hocker New York and R C May Cornwall on Hudson—p 1423
Treatment of Colles Fractures P E Johnson New York—p 1427
Importance of Routine Wassermann Test in Private Practice: Case Reports Marie Pichel Warner and B W Warner Bronx—p 1430
Carcinoid of Appendix: Ruptured Ovarian Cyst J Lebovitz Woodside—p 1433
*Sequence of Infectious Diseases in Upper and Lower Respiratory Tract: Anatomic and Clinical Considerations A Settel New York—p 1435

Infectious Diseases in Respiratory Tract—Settel gives the following reasons for believing that within the limits of the respiratory system morbid conditions tend to pass from the upper to the lower part of the respiratory tract rather than in the reverse direction: (1) aspiration of secretions with their bacterial products, by gravity and suction, (2) muscular action in the pharynx as in swallowing and hawking, (3) ciliary action in the upper and lower part of the respiratory tract except

in the middle and lower parts of the pharynx, where the epithelium is of the stratified squamous variety due to digestive function, (4) neurogenic tonus of the sympathetic and parasympathetic systems, both of which supply the organs of respiration, and (5) vascular and lymphatic pathways for the spread of infection. The evidence that certain disorders of the lower part of the respiratory tract, notably chronic non-tuberculous bronchitis, bronchiectasis and bronchial asthma, have followed this sequence from the upper part of the respiratory tract is based on a number of observed facts that make it seem conclusive. 1 The same pathogenic organisms are found in the primary foci as in the metastatic lesion of the lower part of the respiratory tract. 2 Disorders of the lower part of the respiratory tract have repeatedly improved and in many cases been entirely cured after the infection in a sinus has been cleared up by suitable treatment. The rapidity with which this change takes place after eradication of a sinus infection argues strongly in favor of such a sequence. 3 It may be possible to prove that an infection has come down from the upper part of the respiratory tract to the lower, by inoculating into animals the pathogenic organisms obtained from smears of the nose and sinuses, on the one hand and from the sputum, on the other, and then comparing the results. 4 The frequency with which an infectious disease is found to exist simultaneously in the lower and upper parts of the respiratory tract cannot be regarded as an accident but is evidence that an infection at work in one locale has sent its emissaries, as it were, to found a colony in another region.

Oklahoma State Medical Assn Journal, McAlester

30 281 318 (Aug.) 1937

- Carcinoma of the Pancreas A W White and M F McKinney Oklahoma City—p 281
Placenta Praevia with Discussion of X-Ray Aid W W Wells Oklahoma City—p 285
The Nervous Child C M Pounders Oklahoma City—p 289
Ocular Malignancies W A Cook Tulsa—p 294
Unusual Aspects of Lichen Planus J Stevenson Tulsa—p 296
Treatment of Gonorrhea in the Male D W Branham Oklahoma City—p 298

Pennsylvania Medical Journal, Harrisburg

40 901 1016 (Aug.) 1937

- Determination of Disability in Pneumoconiosis with Reference to Workmen's Compensation W S McCann and N L Kaltreider Rochester N Y—p 901
Surgery in the Ambulatory Patient L K Ferguson Philadelphia—p 909
Imperforate Anus and Tracheo Esophageal Fistula H A O'Hare Corry—p 914
Roentgenologic Findings in Bones as Aids in Diagnosis of Diseases in Infants and Children R S Bromer Bryn Mawr—p 917
Clinical Features of Macrocytic Anemias C L Brown Philadelphia—p 922
Correction of Displaced Septal Cartilage Especially in Children S Cohen Philadelphia—p 925
Gonorrheal Arthritis with Especial Reference to Fever Therapy W H Thomas Philadelphia—p 930
Intestinal Intoxication Review of Cases with Notes on Treatment J P Scott Philadelphia—p 934
Lyophilic Serum in Prevention and Treatment of Scarlet Fever and in Prevention of Other Infectious Diseases Brief Summary A C McGuinness J Stokes Jr and S Mudd Philadelphia—p 939
*Ultraviolet Irradiation and Autohemotherapy in Syphilis Treatment of Persistent Serologic Positive and Latent Syphilis H L Baer Pittsburgh—p 943
Upper Urinary Tract Diseases as Complications of Prostatic Hypertrophy F G Harrison Philadelphia—p 948
Primary Carcinoma of the Ureter Report of Case P P Mayock Wilkes Barre and W Baur's Nanticoke—p 953
Gonorrheal Epididymitis Incidence and Practical Considerations F S Schofield and P R Leberman Philadelphia—p 956
Cancer of the Rectum D B Pfeiffer Philadelphia—p 959
Organic Mercurials and Mercury Therapy of Syphilis with Especial Reference to Hydramilon N R Ingraham Jr Philadelphia—p 960

Ultraviolet Irradiation and Autohemotherapy in Syphilis—Baer carried out the following procedure in the treatment of thirty patients who presented persistently positive serologic studies. The entire body was exposed to the ultraviolet rays with graduated erythema dosage twice a week. Following the first ten treatments (thirty treatments in all) and the last ten treatments 15 cc. of autogenous blood was administered into alternating gluteal areas half an hour after irradiation. Wassermann Kahn and Hinton tests were performed prior to and at the conclusion of the course of treatment. The colloidal gold globulin and Wassermann tests were performed on the spinal

fluid in most of the cases. Polymorphonuclear leukocyte and differential counts were made prior to and after each irradiation. The material represented the usual types of Wassermann fast patients who have received but have not serologically responded to routine treatment with arsphenamine, tryparsamide, iodobismutol, preparations of bismuth, mercury compounds, potassium iodide and sodium iodide. Of the thirty patients placed under this regimen, twenty-seven were observed throughout the study. Ten patients showed a complete reversal of their serologic studies. Five patients who had studies of the spinal fluid prior to the institution of the treatment, showed a simultaneous complete reversal with the blood. Clinically, five were asymptomatic, two tabetic and three belonged to the dementia paralytica group. All this group gained in weight and stated that they felt better, slept better and had more desire to do things. A study of the blood counts before and after each treatment did not reveal any significant data and gave no clue as to the role the leukocytes may have played in the immunologic phase. There was no definite trend of a curve following each treatment or during the course of the treatment. Of the seventeen patients who did not respond to this treatment, clinically eleven were asymptomatic, one showed an interstitial keratitis and congenital syphilis, two showed dementia paralytica and tabes with cardiovascular changes, and three had dementia paralytica. There were no changes noted in the blood, the blood count or the spinal fluid. The foregoing treatment should not supplant chemotherapy or fever therapy but can be used in the hopeless cases when these forms are contraindicated and have been unsuccessful.

Public Health Reports, Washington, D C

52 1135 1168 (Aug 20) 1937

- *Experimental Meningitis in Guinea Pigs Sara E Branham R D Lillie and Anna M Fabst—p 1135
*Serum Studies in Experimental Meningitis Lack of Protection for Rabbits and Guinea Pigs Sara E Branham and Anna M Fabst—p 1143
Plans of the Chilean Government for Improving the Nutrition of the People E Cruz Coke—p 1150

Experimental Meningitis in Guinea-Pigs—A continuation of the effects of injections of meningococci and meningococcus products into the cisterna magna in guinea pigs is given by Branham and her collaborators. Their earlier experiments were reported in 1932. Young guinea pigs weighing from 200 to 250 Gm were inoculated intracisternally, under ether anesthesia, with living cultures of meningococci, with heat killed cultures with filtered suspensions of living cultures and with broth filtrates. Weight and temperature were recorded daily for each animal as long as it was under observation. The cultures were of freshly isolated strains. The dose given to guinea-pigs usually varied between 10,000,000 and 100,000,000 meningococci, depending on the virulence of the strain. The number of meningococci injected was contained in a volume of from 0.2 to 0.3 cc of Ringer's solution. A purulent meningitis was produced alike by living meningococci, by killed cultures, by Berkefeld filtrates of suspensions from agar cultures (suspension filtrates) and by filtrates of broth cultures. The meningeal exudate appeared in from three to five hours. It was predominantly purulent in character, was denser on the base of the brain and between the brain stem and the occipital cortex and was often accompanied by congestion and hemorrhage. Fibrin was most often evident after inoculation with killed cocci. The sheaths of perforating and less often deep vessels were often infiltrated by purulent exudate. Purulent thrombosis was not infrequent, being especially common after inoculation with killed cocci. Purulent exudate in the ventricles occurred in the majority of the animals inoculated with living or killed cultures and in about 75 per cent of those receiving broth filtrates and dying in less than thirty hours but was infrequent with the suspension filtrates. Choroid plexus infiltration was correspondingly frequent. Purulent infiltration of the brain substance abutting on the meninges or ventricles was found in more than 50 per cent of the animals inoculated with cultures or broth filtrates. Other less frequent features of the process were perivascular hemorrhages, hilar marginal or central abscesses and suppurating ependymal ulcers in the ventricles. Pericellular edema in the cerebral cortex and turgescence and vacuolation in the nuclei of the brain stem were observed fre-

quently, especially in animals surviving more than twelve hours. In subsiding reactions the meningeal exudate decreased in amount and became partly or entirely lymphocytic in character, the involvement of intracerebral vessel sheaths disappeared and the ventricular exudates decreased and disappeared. Plexal infiltration became lymphocytic or disappeared entirely. With filtrates and killed cultures evidence of subsidence was observed on the second day, while with living cultures no decrease in the reaction was apparent until after three days. It appears that meningococcal meningitis in guinea-pigs may be either an infection or an intoxication. In both infection and intoxication the clinical and histopathologic pictures were the same.

Lack of Protection in Antimeningococcus Serum—In studying the effect of antimeningococcus serums on meningitis in both rabbits and guinea-pigs Branham and Pabst found that, although meningitis was easily produced in these animals, they were not protected to any appreciable degree by the serums when these were administered intracisternally, intraperitoneally or intravenously. Some of the experiments have suggested that with more perfect methods of concentrating the serums better protection may be obtained.

Radiology, Syracuse, N Y

29 131 260 (Aug) 1937

- Gross Anatomic Changes in Lungs P Hillkovitz Denver—p 131
Cranial Dysplasias of Pituitary Origin H Mortimer Montreal G Levene and A W Rowe Boston—p 135
Pellegrini Stieda's Disease Manifestation in Knee of Posttraumatic Changes Common to Other Joints H S Callen Bradford Pa—p 158
Hereditary Multiple Ankylosing Arthropathy (Congenital Stiffness of Finger Joints) A R Bloom Detroit—p 166
Correlation of Surgical and Roentgenographic Findings Following Thoracoplasty for Chronic Pulmonary Tuberculosis L A Hochberg and L Nathanson Brooklyn—p 172
*Should the Method of Coutard Be Applied in All Cases of Cancer Treated by Roentgen Rays? W E Chamberlain and B R Young Philadelphia—p 186
Interlobar Effusion Associated with Heart Failure J Levitt San Francisco—p 190
Attempt to Involute Completely All of Lymphoid Tissue of Albino Rat by X Rays C W Hughes and T T Job Chicago—p 194
Measurement of Tissue Dose in Terms of Same Unit for All Ionizing Radiations G Failla New York—p 202
Cholecystography Further Observations on Use of Pitressin and Evaluation of Other Procedures E N Collins and J C Root Cleveland—p 216
Fracture of Atlas or Developmental Abnormality? H F Plaut Cincinnati—p 227

Coutard's Method of Treatment of Cancer—Since the results of Coutard therapy in the treatment of cancer of the larynx, pharynx and hypopharynx have been so far superior to any present or previous method, Chamberlain and Young believe that no other procedure should be considered when roentgen treatment for the disease at these sites is indicated. The same statement holds for cancer in certain other organs, for example, the cervix, breast, bladder, esophagus, bronchus and rectum, although it is often necessary to modify the dosage depending on the size and location of the tumor and the condition of the patient. In those lesions which respond to Coutard therapy better than to "massive doses," the advantage of the protracted fractional dose method must rest on the existence of a more rapid "recovery rate" in the skin than in the tumor. There are tumors requiring massive doses just as surely as there are tumors that require the method of Coutard. Certain small superficial growths are completely destroyed by a single large dose of from 3000 to 5000 roentgens with complete assurance that the resulting ulcer, of small size, will heal completely. For example, a small or moderate sized isolated nodule of recurrent mammary cancer in an accessible or superficial location. A plan of monthly doses of from 300 to 800 roentgens (usually in a three or four day series) is considered by the authors whenever they are faced with (1) a highly roentgen resistant tumor and a microscopic structure that indicates a high degree of tissue differentiation (fibrosarcoma, neurofibroma metastasizing thyroid adenoma) or (2) when the element of vascularity is an important factor (hemangioma, certain telangiectatic tumors of the spinal canal, some highly vascular but relatively radiation-resistant sarcomas of the bone). While the literature appears not to contain any analytic references to this type of technique it is obvious that Newcomet, Ewing, Ginsburg and others have consciously or subconsciously adopted some such method.

West Virginia Medical Journal, Charleston

33 341 388 (Aug) 1937

- Pain in Abdominal Crisis B H Swint Charleston—p 341
Syphilis versus Health T Parran Washington D C—p 347
Diagnostic Suggestions in Gynecology W M Warman Morgantown—p 352
The Barbiturates R L Hunter Madison—p 355
*Tuberculosis of the Breast A P Hudgins, Charleston—p 357
Therapy of Neurosis or Neurocirculatory Asthenia W F Daniels Huntington—p 370
Rupture of the Aorta Case Report with Discussion R W Corbitt and A R K Matthews Parkersburg—p 372

33 389 436 (Sept) 1937

- Vertigo deW G Richey Pittsburgh—p 389
The Prevention of Appetite Problems in Childhood J L Blanton Fairmont—p 394
Our Hospital Problem and How It Affects Organized Medicine R J Wilkinson Huntington—p 398
Recent Advances in Thoracic Surgery J A Soffel Pittsburgh—p 401
Evipal Anesthesia H St Clair Bluefield—p 408
Spinal Anesthesia W L Van Sant Hinton—p 413
Aortic Stenosis A C Woolfer Parkersburg—p 415
Treatment of Fractures by Operative Method J H Wagner Pittsburgh—p 418

Tuberculosis of the Breast—Hudgins says that 1 Tubercle bacilli may enter the breast through the skin or the nipple by an abrasion or other breaks in the continuity of the integument. 2 They may enter the blood stream and circulate without actually having formed an original demonstrable focus in the body. Such organisms in the blood stream may be the causative agent of a mammary tuberculosis with perhaps no other foci. 3 Infection through the lymph system usually occurs from the axillary glands, though the spread may occur from other glands, chiefly the tracheobronchial, cervical, supraclavicular or retrosternal. 4 Infection by direct extension may occur, such as infection from the skin over the breast. Trauma could be definitely traced as a possible etiologic factor in only 8 per cent of the 361 cases reported in the literature up to January 1935, and a preceding attack of mastitis in only 6 per cent of the cases. Ten instances were specified in which the onset occurred during pregnancy and fourteen cases in which the mass was noted during lactation. The chief symptom causing the patient to present herself for examination is a "mass in the breast." Next in order were "mass with discharge," "swelling of entire breast" and "mass with pain and discharge" all being common. Exclusive of "mass," "retracted nipple" was complained of most frequently, and "axillary gland," "discharge from the nipples" and "ulcer" each ranged from 1 to 2 per cent. Pain is an early and constant symptom. Cancer of the breast does not give pain or tenderness early. If, then, pain or tenderness is found, it practically rules out cancer and obviates the necessity of considering an extensive mutilating operation and may be used as an important point in the differential diagnosis. The skin is found to be involved frequently. It is more frequently attached to the mass than discolored. The term "orange skin" is used to describe the appearance of the surface overlying the mass at times. Discoloration is usually a reddening. The nipples were found to be retracted in 27 per cent of the cases and a discharge could be expressed in 6 per cent. The retracted nipple gives an added hazard in the problem of differential diagnosis between cancer and tuberculosis. Axillary nodes were found in 41 per cent of the cases, making this of definite diagnostic value in some differential points (fibroma, cysts, and the like). There seems to be a preference for the tuberculous mass in the upper outer quadrant. Tuberculosis of the breast is a rapid growth. Sudden changes in size and contour of the breast with early involvement of the axillary nodes cause the patient to come to the physician. In spite of this urgent local symptom, the general condition of the patient is remarkably good. Nodular tuberculous mastitis is by far the most common form of acid fast involvement of the breast, and this general group is divided into two classes: nodular discrete and nodular disseminated or confluent. The tuberculous mass is irregular in contour, fairly well defined and usually tender. It is of irregular consistency. The benign growths that must be excluded before a diagnosis of tuberculosis of the breast can be made are fibroma, cysts, carcinoma (including Paget's disease), sarcoma, pyogenic infections, syphilis and actinomycosis. Simple mastectomy is the operative surgical procedure of choice.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

21 401 464 (Aug) 1937

Investigation into Theories on Formation and Exit of Intra Ocular Fluids J D Robertson—p 401

British Medical Journal, London

2 199 252 (July 31) 1937

Removal of Right or Left Frontal Lobes in Man G Jefferson—p 199
Enuresis R Hutchison—p 206
Care of Vocal Cords in Singers and Speakers M Rees—p 208
Obstetric Significance of Pelvic Variations Study of 450 Primiparous Women H Thoms—p 210
Treatment of Tennis Elbow G P Mills—p 212

Indian Journal of Medical Research, Calcutta

25 1 324 (July) 1937 Partial Index

Diet Survey Repeated at Another Season W R Aykroyd and B G Krishnan—p 1
*Red Palm Oil in Treatment of Human Keratomalacia W R Aykroyd and R E Wright—p 7
Possible Use of Red Palm Oil in Supplementing Vitamin A Activity of Common Vegetable Oils N K De—p 11
Excretion of Vitamin C by Human Beings in South India S Ranganathan Rao and G Sankaran—p 29
Studies on Vitamin A Deficiency Part II Histopathology of Skin in Human Keratomalacia M V Radhakrishna Rao—p 39
Survey of Nutritive Value of Indian Foodstuffs Part II Changes in Chemical Composition Brought About by Cooking S Ranganathan A R Sundararajan and M Swaminathan—p 45
Relative Value of Proteins of Certain Foodstuffs in Nutrition Part II Comparative Biologic Values of Proteins of Certain Cereals Pulses and Skimmed Milk Powder Measured by Growth of Young Rats M Swaminathan—p 57
Transformation of Carotene into Vitamin A in Liver Autolysates H E C Wilson B Ahmad and B N Mazumdar—p 85
Studies in Vitamin C Effect of Cooking and Storage on Vitamin C Contents of Foodstuffs M N Rudra—p 89
Lead in Urine and Feces K N Bagchi and H D Ganguly—p 147
Investigations into Epidemiology of Epidemic Dropsy Parts I to V Introductory Notes and Historical Survey Field Studies Rice as Etiologic Agent Infection Theory and Field Experiments on Human Volunteers R B Lal S C Roy and S C Ghosal—p 163
Studies on Etiology of Epidemic Dropsy Effect of Plasma on Tissue Culture and Chorio Allantoic Membranes of Chick R N Chopra N N Das and S N Mukherjee—p 261
Study of Ossification as Observed in Indian Subjects G Galstaun—p 267

Treatment of Keratomalacia—Aykroyd and Wright determined the vitamin A activity of red-palm oil by experimentally producing in rabbits a condition resembling clinical keratomalacia. They cured these characteristic lesions of the eye by giving the rabbits from 0.5 to 2 Gm of red palm oil. Then they carried out a clinical trial using 10 minims (0.6 cc) of the original oil in an emulsion as an average dose for children between 5 and 10 years of age a suitable allowance being made for younger and older patients. This was given twice daily. Difficulties are encountered, one of which is the possibility that a beneficial effect on cases of deficiency may result from simply admitting the patients and placing them on a hospital diet. In three instances, however, the authors were enabled to treat and follow up patients suitable for observation who remained living under the identical domestic conditions in which they developed the syndrome. The only change in their daily routine was the addition of red-palm oil emulsion to their diet. In these the improvement was so definite that they concluded that, so far as the strictly limited observation goes, the red-palm oil alone acted in a curative capacity, supplying the necessary factor or factors in the same way as cod liver oil had done previously. Most of the patients with keratomalacia treated in the hospital were infants and young children. Cessation of deterioration may be observed within a week and a definite improvement within a fortnight from the commencement of treatment with the red-palm oil. The average vitamin A content of seven samples of cod liver oil tested was about 300 micrograms of vitamin A per gram while the carotene content of three samples of red-palm oil averaged about 500 micrograms per gram. Most of the samples of cod liver oil were obtained by local purchase. One microgram of carotene and 1 microgram of vitamin A, as estimated by Des method, are roughly equivalent to 1 and 26 international units, respectively.

Medical Journal of Australia, Sydney

2 79 120 (July 17) 1937

'Organism' Consideration of Regulated Vascular Transport. S Hicks—p 79
Peptic Ulcer F Beare—p 86
Some Remarks on Treatment of Peptic Ulcer I Hamilton—p 94
Medicolegal Evidence and Autopsies D S McKenzie—p 98

2 121 160 (July 24) 1937

Vascular Disorders of Limbs G C Wilcocks—p 121
*Placental Infection in Induced Labor with Especial Reference to Its Relationship to Fetal and Neonatal Mortality W J Penfold and Hildred M Butler—p 128
Cyclopropane Anesthesia Preliminary Survey S V Marshall—p 138
Small Aneurysms at Base of Brain and Subarachnoid Hemorrhage J B Cleland—p 141
Interesting Self Protecting Mechanism in Protozoan Vorticella B Bradley—p 142

Placental Infection in Induced Labor—Penfold and Butler record the results of the bacteriologic examination of 114 placentas, in forty-six of which labor had been induced with the rectal tube, in the remainder surgical induction of labor was carried out. In addition, in those cases in which the child failed to survive, cultures were also obtained from the fetus in most instances. Placental infection was detected two and a half times more often following the surgical induction of labor than in those cases in which no such operation had been performed. Of the forty-six placentas from cases in which induction had been practiced, twenty-eight were infected, thirteen with *Bacillus coli* and four with *Bacillus welchii*, indicating the fecal origin of the infections. Two of the thirteen placentas infected with *Bacillus coli* were also infected with *Bacillus welchii*. Among the sixty-eight controls only sixteen yielded growth, and in no instance were the organisms of a characteristic fecal type. Among the control group infection of the placental vessels was never detected but among the forty-six induced cases organisms were cultivated from the blood of these vessels in fourteen instances. Of the sixteen strains of bacteria isolated from the placentas from normal labors, only three were able to grow in the presence of air. The authors do not consider that the ten strains of *Staphylococcus albus* and the six strains of aerobic diphtheroids isolated from the placentas of the patients whose labors were induced were contaminants introduced during the making of the cultures, since such bacteria were not obtained from any of the control group. They believe that these bacteria were enabled to grow up into the uterus following the operation of induction. They were possibly fecal in origin or more likely came originally from the skin and invaded the placenta together with the fecal organisms introduced, since in all but two instances they were present in the placenta in association with typical varieties of fecal bacteria. A prolonged interval between the induction of labor and the delivery of the child increases the risk of infection of the placenta. Placental infection is not dependent to any great extent on the maternal condition or on the age of the fetus. The infections of the placenta with *Bacillus coli*, aerobic nonhemolytic streptococci and *Bacillus welchii* have been associated with a high infantile mortality. Mixed infections of the placental tissue and infections of the large fetal vessels of the placenta are especially serious for the infant. The bacteria cultivated from the dead infants are usually similar to those obtained from the placenta. When additional organisms are present in the fetus, their source is probably from infected amniotic fluid. There is a high correlation between fever in the mother and infection of the placental tissue.

Practitioner, London

139 105 212 (Aug) 1937

Immunization Against Diseases in the Tropics G M Findlay—p 105
Investigation of Cases of Obscure Fever P Manson Bahr—p 115
Medical Organization of Air Raid Precautions W C Bentall—p 131
Air Warfare and the General Practitioner L H Guest—p 139
Diagnosis and Treatment of Poisoning W Wilcox—p 149
The Suicidal Impulse and Value of Psychologic Treatment. Hilts Weber—p 168
Urinary Tuberculosis Its Symptoms and Signs T E Hammond—p 178
Agranulocytosis C G Magee—p 185
Diet in Health and Disease II Sickroom Menus and Recipes R H Wansbrough—p 192

Encephale, Paris

2 156 (June) 1937

- *Polypeptides of Blood and Cerebrospinal Fluid in Dementia Paralytica
H. Claude, J. Dublneau, P. Masquin and Mlle. Bonnard —p. 1
Dynamic Concepts and Epileptic Crisis S. E. Jelliffe —p. 15
Reflex Epilepsy A. Radovici, M. Schachter and S. Kisilev —p. 26

The Polypeptides in Dementia Paralytica—Claude and his associates studied the variations of the polypeptides before, during and after malaria or fever therapy in patients with dementia paralytica. They found that the polypeptide content of the cerebrospinal fluid is often increased in patients with dementia paralytica. This increase may be independent of the polypeptide content of the blood and may exist without a sign of hepatic insufficiency. In these cases one is led to admit a formation in situ of the polypeptides of the spinal fluid. Leukocytolysis has recently been suggested as favoring this increase in the polypeptides of the spinal fluid. But the authors do not consider this the only causal factor. The polypeptide value differs in the course of dementia paralytica. After malaria treatment it decreases, but it varies in different cases; it is relatively high in patients in whom the clinical results are negative, but it is practically normal in those in whom the process shows a favorable development. In some of the latter cases the decrease in the polypeptides of the spinal fluid has been known to be in evidence in the course of the malaria therapy and during the following months. Thus it seems that the curve of the polypeptide content of the spinal fluid has prognostic significance. The return to normal values permits hope of a favorable development.

Journal de Medecine de Lyon

18 447 470 (Aug. 20) 1937

- *Masked Forms of Cancer of Transverse Colon A. Cade and M. Milhaud —p. 447
*True Pyloric Ulcer C. Garin and P. Bernay —p. 453
Treatment of Tetanus of Human Subjects by Tetrachlorethylene C. Garin —p. 457
*Pseudo-Esophageal Form of Bronchial Cancer Rebattu, Gravier and Sprecher —p. 459
Mega Esophagus and Stenosis of Terminal Portion of Esophagus C. Bocca —p. 463

Masked Forms of Cancer of Transverse Colon—Cade and Milhaud show that the diagnosis of cancer of the transverse colon is often difficult. In the beginning as well as during the further evolution these cancers may present an atypical symptomatology. Among these masked forms those with a pseudohepatic symptomatology are especially difficult to identify. The authors report a case in which the diagnosis remained uncertain to the end, because of the complex clinical aspect and because the patient previously had had malaria and dysentery. During the time the patient was under the observation of the authors the patient had fever. It is well known that cancers of the large intestine may be accompanied by fever, but this symptom is also a frequent source of error. At different times the patient also presented symptoms of colitis and of dysentery. The authors admit that the simulation of dysentery by cancer is not rare but that it usually occurs in rectosigmoidal cancer, rarely in cancer of the transverse colon but they also discuss the possibility of a concurrence of dysentery and cancer. They emphasize that methodical and repeated x-ray examinations are of great value in cases of this type.

True Pyloric Ulcer—According to Garin and Bernay, true pyloric ulcer, that is, ulcer of the pyloric sphincter, is relatively rare. Its clinical aspects vary. The pain, which is usually severe, is generally the principal sign. The development of a stenosis is not particularly frequent. The chemistry is often without significant aspects. Gastrophotography may show lesions of a gastric character. Roentgenoscopy when done with great care is of much help in the identification of pyloric ulcer, but in a considerable number of cases the diagnosis proves extremely difficult.

Pseudo-Esophageal Form of Bronchial Cancer—Rebattu and his associates describe the clinical history of a man aged 53 who asked medical advice on account of vocal disturbances which had begun suddenly, during complete health several weeks before. Examination revealed paralysis of the left recurrent nerve with immobilization of the vocal cord on the median line. The other vocal cord was practically normal as were

the other portions of the larynx. Auscultation, palpation of the neck and examination of the nervous system revealed nothing abnormal and it appeared as if the recurrent paralysis originated from a mediastinal lesion. Later the patient developed progressive dysphagia. Repeated esophagoscopies finally suggested a submucous neoplasm of the esophagus. There were no signs of syphilis or tuberculosis. On several occasions the patient had blood in the sputum and bronchoscopy was resorted to. This and biopsy finally disclosed the bronchial tumor, but until the end the symptoms were those of an esophageal stenosis. The authors point out that tracheobronchial cancer is not the only lesion which manifests itself by dysphagia and simulates esophageal cancer. All disorders in the region of the mediastinum are likely to compress the esophagus. The authors think that in all mediastinal syndromes, in which the clinical diagnosis is often extremely difficult, endoscopy (esophageal and bronchial) is of primary importance and is superior to roentgenologic examination, which does not always give conclusive results.

Presse Medicale, Paris

45 1219 1234 (Aug. 25) 1937

- *Serologic Diagnosis of Infectious Mononucleosis A. Durupt —p. 1219
Clinical Significance of Electric Potential of Cells R. Keller —p. 1221

Serologic Diagnosis of Infectious Mononucleosis—After citing fever and cervical or general adenopathy as the most common symptoms of infectious mononucleosis, Durupt points out that these two essential symptoms are accompanied by angular symptoms, slightly enlarged spleen and a leukocytic formula that is characterized by a more or less pronounced mononucleosis. He also shows that various terms have been applied to this disorder, such as Pfeiffer's glandular fever and monocytic angina. Until now, the diagnosis has generally been based on the hematologic examination, which reveals a leukemoid formula. But this leukemoid blood picture makes it difficult to decide whether the disorder is benign, that is, an infectious mononucleosis, or a lymphoid leukemia with a fatal prognosis. The author shows that for this reason a serologic diagnosis of infectious mononucleosis, which was developed by the investigations of Paul and Brunnel and those of Davidsohn, is of great value. This serologic reaction is based on the presence of an abnormally large quantity of heterophilic antibodies (against sheep corpuscles) in the blood of patients with infectious mononucleosis. It is made in two stages. The first part of the test determines the agglutinating power of the patient's serum for the erythrocytes of sheep and the second part investigates whether the antishape agglutinins are susceptible to absorption by the antigens of Forssmann. The author describes the technic of these procedures (see also *THE JOURNAL*, Jan. 23, 1937, p. 289) and reaches the conclusion that the serologic diagnosis of infectious mononucleosis deserves a place in current laboratory practice. Its technic in two stages is as simple as that of the Wassermann test.

Folia Medica, Naples

23 673 726 (July 15) 1937

- *Variations of Blood Corpuscles in Experimental Catatonia from Typhoid Bacillus Toxins A. Milella and F. Barbanente —p. 675
Resistance of Group Specific Properties of Urine to Physical and Chemical Agents F. Tarantino —p. 704

Variations of Blood Corpuscles in Experimental Catatonia—Milella and Barbanente say that it is possible to induce experimental catatonia in dogs by means of intravenous injections of filtrates of the toxins of typhoid bacilli. The filtrates are prepared by filtering cultures of typhoid bacilli through a Chamberland filter of the B type. The symptoms (immobility, spontaneous and induced negativism, complete and segmental catalepsy and catatonia) are similar to those of catatonia in men. At the same time that the symptoms of experimental catatonia appear the crisis of the blood of the animals undergoes the same changes as those caused by typhoid in the blood of men. The changes are diminution of the erythrocytes, leukopenia which is followed by leukocytosis, neutropenia and lymphocytosis. There is a shut to the left in Schilling's hemogram. Diminution of the liver glycogen which is induced in the animals by fasting, increases the catatonic symptoms, intensifies the variations of the crisis of the blood and causes appear-

ance of polynucleated neutrophils with toxic granulations in the protoplasm. The identity of experimental catatonia, induced by the toxin of the typhoid bacilli, with catatonia in men and the simultaneous appearance of changes of the crisis of the blood, also induced by the typhoid toxin, which are similar to those taking place in the blood of patients suffering from typhoid, show that the typhoid toxin is the only cause of the two different phenomena. Catatonia originates in the harmful action of the toxin on the central nervous system, especially the cortex and centers in the midbrain, whereas the changes of the crisis of the blood originate in organic reactions to the toxin.

23 729 780 (July 30) 1937

- *Action of Decoction of Seeds of *Lupinus Albus* on Glycemia Induced by Administration of Dextrose in Normal Persons and in Diabetic Patients A Ferrannini and M Pirolli—p 731
Biochemical and Histologic Changes of Muscles from Mechanical Immobilization Changes of Water Content and Dry Residues N Toro—p 749
Progressive Chronic Articular Rheumatism Clinical Forms and Social Importance L Di Prisco—p 758

Action of Seeds of *Lupinus Albus* on Glycemia—Ferrannini and Pirolli used the following method. Five hundred grams of *Lupinus albus* seeds was made into flour and boiled in 600 cc of water. As the volume of the decoction was reduced by boiling to 350 or 400 cc, water was added in order to bring it to 500 cc so that 50 cc of the decoction would correspond to 50 Gm of the seeds. By experimenting on rabbits it was found that the decoction does not modify glycemia and is nontoxic. The action of the decoction was then studied on two groups of persons: those with a normal metabolism of carbohydrates and diabetic patients with glycosuria and without complications. Both groups were kept at rest before and during the tests, which were made on stomachs fasting for eighteen hours. The curves of glycemia were determined before and one-half, one, two, three and four hours after administration of 0.75 Gm of dextrose per kilogram of body weight. The dextrose was dissolved in 200 cc of water the first day of the test. Two days later the second test was made. The dextrose then was dissolved in 50 cc of the decoction of *Lupinus albus* and brought to a volume of 200 cc by adding water. It was found that the decoction of *Lupinus albus* increases the tolerance of the body to carbohydrates, slightly in normal persons and intensely in all diabetic patients. The seeds of *Lupinus albus* induce hypoglycemia without causing any disturbance in the patient. The authors point out the possible application of *Lupinus albus* in substitution for insulin or during suspension periods of insulin administration.

Haematologica Archivio, Pavia

18 559 650 (No 6) 1937

- Histologic Reactions from Antismallop Vaccine Inoculated into Hematopoietic Organs M Mattioli—p 559
Group Specific Action of Human Polyvalent Immune Serum F Hausbrandt—p 593
Nuclear Shadows in Acute Lymphatic Leukemia R Liberti—p 599
Behavior of Reticulocytes in Normal Pregnancy and Puerperium U Possaghi—p 615
Researches for Verification of Theory of Phagocytic Origin of Foal Kurloff Bodies B Babudieri—p 627
*Modifications of Myelogram and of Peripheral Blood in Pulmonary Abscess A Bertola and M Ravetta—p 635

Modifications of Peripheral Blood in Pulmonary Abscess—Bertola and Ravetta studied the modifications of the peripheral leukocytic formula and of the myelogram in eight cases of pulmonary abscess. In five cases the abscess was of metapneumonic origin, in two cases it developed in patients suffering from chronic bronchitis and in one it was an amebic abscess of the lung. The blood for counting cells was taken from fasting patients. The puncture for obtention of the sternal medulla was done at the second and third intercostal space with a needle long enough to obtain fragments of medullary tissue. The myelograms were made by examination of several slides, with no less than 1,000 or 1,500 cells on each slide. The authors found that in cases which follow a grave evolution there are a relative increase of the granuloblasts in the blood and in the medullary tissue and absence of eosinophils in the blood and of myeloid and histoid cells with eosinophil granulations and of plasma cells in the bone marrow. In cases which follow a favorable evolution there are a relative increase of erythroblasts in the bone marrow and diminution of the

leukoblasts. There are also eosinophilia and increase in the bone marrow of myeloid and histoid cells with eosinophil granules in different stages of maturation and increase of plasma cells. The authors say that the formation of erythroblastic tissue in the bone marrow is of good prognosis and that there is a relation between the modifications of the blood and of the hematopoietic organs in the course of pulmonary abscess and the etiology and evolutionary phase of the condition.

Minerva Medica, Turin

2 197 216 (Aug 26) 1937

- *Differential Serologic Properties of Exanthematous Rickettsia Fever G Mariani—p 197
Differential Clinical Diagnosis of Acute Barbituric Poisoning from Poisoning by Other Hypnotics L Donatelli—p 198
Edema of Liver in Catarrhal Jaundice and in Other Diseases G Mottura—p 203
Changes in Respiration from Surgical Intervention C Colombo—p 210

Differential Serologic Properties of Rickettsia Fever—According to Mariani, the serologic property that differentiates the classic form of typhus fever from other exanthematous fevers similar to typhus is its agglutinating property. The blood serum of patients suffering from typhus transmitted by the bite of lice agglutinates only *Proteus* X19. That of patients suffering from other rickettsia infections transmitted by ticks or fleas agglutinates only *Proteus* of the Kingsbury strain. Recently the author treated, in hospitals of Addis Ababa, several cases of typhus in white patients. The clinical picture of the disease was that of typhus. A scar showing the bite of ticks was not detected. In the largest number of cases the blood serum of the patients agglutinated only *Proteus* of the X19 strain. However, the blood serum of two patients agglutinated both the X19 and the Kingsbury strains and that of eight patients agglutinated only the Kingsbury strain. The author believes that typhus fever and exanthematous fevers probably exist in the Ethiopian plateau.

Semana Médica, Buenos Aires

44 353 408 (Aug 12) 1937 Partial Index

- Diagnosis of Jaundice O Ivanisovich and L H Marturena—p 361
*Genito-Urinary Disorders from Spina Bifida Occulta H D Berri—p 364
Diaphragmatic Hernia of the New Born M V Falsa and R S Allievi—p 368
*Solitary Bone Cysts A A Salvati—p 371
Aeriform Cyst of Lung in Children J G Fernandez M A Carri and J M Camaña—p 381
Treatment of Gout in Ambulant Patients R Hernandez—p 389
Spleen Opotherapy of Eczema in Infants J R Mendilaharsu and I Diaz Bobillo—p 402

Genito-Urinary Disorders from Spina Bifida Occulta—According to Berri, spina bifida occulta is a frequent cause of genito-urinary disturbance in patients who are otherwise normal. He distinguishes three types of spina bifida occulta: a simple bony cleft without organic disorders, the bony cleft associated with lesion of the spinal cord, and a local process of abnormal formation of adhesions, ligaments and sometimes tumors which compress the spinal dura mater or the dural sac. Whereas a surgical intervention gives no relief to patients suffering from the second type of the disease, removing the compressing structures in the third type induces, as a rule, recovery or great improvement of the condition caused by compression of the spinal cord. The author's patient, aged 21 years, complained of nocturnal enuresis from childhood. His general condition, urinary tract and urine were normal. There were neither nervous diseases nor retention of the urine. Some times he suffered from frequent urination during the day. A simple x-ray examination of the vertebral column and also the examination of the structure after an ascending injection of iodized oil showed the presence of spina bifida occulta of the type of complete sacral hiatus. A deep cleft formed by the muscles that lay over the lesion was manifest from the beginning of the surgical intervention. There was a bundle of fibrous tissue in the muscles and over the unossified spot and cartilaginous tissues and strong adhesions replacing the spinous processes of the sacral vertebrae and entering deep into the spinal canal. The surgical intervention consisted in removing the block of fibrous and cartilaginous tissues and the adhesions and resecting the spinous process of the fourth lumbar vertebra which was the seat of formation of pathologic tissues.

Enuresis took place only twice during the first eleven nights that followed the operation. At the present time, five months after the operation, the patient, as a rule, feels, while sleeping, a desire to urinate, which wakens him. However, enuresis takes place once in a while. The urinary disorder was not entirely controlled. Compression of the dural sac, probably by adhesions that were not seen during the surgical intervention or by scar tissue that formed afterward, still persists. However, the improvement of the condition shows that the dural compression is less intense at the present time than it was previously.

Solitary Cysts of Long Bones—Salvati makes a general study of solitary cysts of the long bones in children, with especial reference to the type of cysts complicated by fracture of the cystic bone. Intense or slight trauma causes the fracture, which is followed by appearance of swelling of the cystic area, limitation of the movements of the limb and local pain. The cyst can be felt by deep palpation as a thickness or callus of the bone. As a rule there is some crepitation. The cyst shows in the roentgenogram as a multilocular or unilocular clear bulky area which is well delimited from the entire zone of normal bone. The periosteum does not react to the cystic formation. The bone that forms the cortex of the cyst becomes thin as an eggshell. The process of reparation of the fracture is complete within three or four weeks. Frequently it stimulates the process of ossification at the cystic area, but not to such an extent as to induce complete cure of the cyst. The author concludes that solitary cysts of the bone follow a long evolution for several years during which the bone may be fractured once or several times. When the fracture takes place, one may wait a reasonable time for a possible cure induced by the fracture. Otherwise a surgical intervention is indicated. The operation of choice is filling the cystic cavity with osteoperiosteal grafts, which stimulate the process of local osteogenesis and reparation of the bone. Three cases are reported. The patients were all 4 years old.

Dermatologische Zeitschrift, Berlin

75 313 372 (July) 1937

Efficacy of Short Distance Irradiation in Epitheliomas of Skin H G Bode—p 313

Stages of Lupus Erythematoses of Oral Mucosa Especially of Lips J A Folpners—p 326

*Erythema of the Ninth Day (Milan) and Arsphenamine Dermatitis H Sprafke—p 333

Erythema of the Ninth Day and Arsphenamine Dermatitis—Sprafke says that the erythema of the ninth day was first described by Milan. It is an exanthem that develops approximately nine days after the injection of arsenicals in syphilitic patients. Milan observed morbilliform, scarlatiniform, rubeliform and urticarial types. The individual efflorescences of this exanthem are polymorphic. They may appear in small spots or may be roundish or star shaped. They are disseminated and may become confluent. The rapid disappearance is a characteristic of this type of exanthem. It may recur, the later attacks are usually mild but may also be extremely fulminant. However, Milan thinks that if the treatment is continued the erythema will generally disappear. The exanthem is preceded by prodromal symptoms that resemble those of infectious diseases (increase in temperature, sore throat, conjunctivitis and vomiting). Whereas a number of other investigators agreed with Milan on the symptomatology of the erythema of the ninth day, they did not agree with him on the interpretation of the symptoms. Milan believed that the cutaneous manifestations were true but mild measles, and so on in that the acquired immunity was temporarily interrupted or weakened by the treatment with the arsphenamine but that in the further course of the treatment, the immunity was reestablished. Milan cites a number of facts that he regards as corroborating evidence for his opinion. As the most convincing proof he considers the disappearance of the exanthems if the treatment is continued. By combining the erythema of the ninth day with the idea of biotropism Milan broke down the general belief that the appearance of an exanthem in the course of arsphenamine therapy is necessarily the precursor of an arsphenamine dermatitis. Since according to Milan the erythema of the ninth day and arsphenamine dermatitis are entirely different conditions it is important that

the two are differentiated so as not to deprive a syphilitic patient without cause of the most effective antisyphilitic remedy. After reviewing reports from the literature, which likewise stress the necessity of continuing the arsphenamine treatment in patients in whom the erythema of the ninth day appears, the author describes three cases of his own observation, which he detected among approximately 100 cases of syphilis.

Klinische Wochenschrift, Berlin

16 1105 1136 (Aug 7) 1937 Partial Index

Vitamin C Balance in Human Subjects Tolerance Tests for Determination of Daily Requirements and Saturation Deficit P Hamel—p 1105

Investigations on Treatment of Diabetes Mellitus P Martini and B Schuler—p 1110

*Antigenic Characteristics of Vitamin D J Štefl—p 1119

Observations on Insulin Depot Therapy K Zirwer—p 1121

Experiments on Action of Mandelic Acid in Pyuria During Childhood H Schmuck—p 1122

Treatment of Spastic Conditions Ruther—p 1124

Antigenic Characteristics of Vitamin D—Štefl points out that since the fundamental experiments of Much it has generally been known that many parenterally administered lipoids exert antigenic actions, that is, they stimulate the formation of antibodies. It was later determined by Sachs that chemically pure lipoids alone are capable of eliciting the formation of antibodies only in connection with heterogenic serum or protein. This antigenic action was later corroborated by a number of other authors, and today the appearance of a specific amboceptor in connection with a nonspecific complement is an essential foundation of many practical seroreactions in vitro. That at first experiments were made only in vitro is explained by the fact that, at the time of the discovery of the antigenic characteristics of lipoids, no lipoids were available that had sufficiently severe toxic effects to justify experiments on living animals. Since then however, a number of toxic lipoids have been discovered, for instance vitamin D and its group as well as the carcinogenic hydrocarbons. Nearly all the substances were sterols or sterol-like cyclic hydrocarbons. It was the author's aim to determine whether, by administering small doses of vitamin D in connection with heterogenous protein, it is possible to immunize an experimental animal against a subsequent fatal dose of vitamin D. He shows that the positive outcome of such a test involves the theoretical possibility of immunizing the organism against disorders that result from the pathologic accumulation of cyclic lipid substances in the body, whether the disorder is arteriosclerosis or carcinoma. The author made most of his experiments on white mice. He found that by administering vitamin D in connection with heterogenous protein it is possible to produce within narrow limits an immunity against the subsequent fatal quantity of vitamin D. Within the same narrow limits it is possible to produce a passive immunization with the serum of pretreated rabbits. The aqueous solution of vitamin D is about twenty times more toxic than the pure oily solution. Animals that are under the influence of vitamin D injections are much more sensitive to phenol than they are otherwise.

Zentralblatt für Gynäkologie, Leipzig

61 1873 1920 (Aug 7) 1937

*Irradiation of Spleen in Gynecologic Hemorrhages P Caffier—p 1874

Anamnesis of Hemorrhages in Extra Uterine Pregnancy H Buschbeck—p 1877

Vaginal Melanoma Case E Tscherne—p 1883

Lactogenic Action of Hypophysis of Normal, Pregnant and Lactating Animals M Wiegand—p 1887

Double Manipulation to Change a Coccyx Foot Presentation to a Foot Presentation C Holtermann—p 1890

Irradiation of Spleen in Gynecologic Hemorrhages—Of twelve cases of juvenile gynecologic hemorrhages in which Caffier resorted to irradiation of the spleen, nine cases responded favorably, to be sure, in four of them the improvement was only temporary. However, in four of the five cases, in which the treatment was most effective not only was the hemorrhage arrested in from one to three days but the menstrual cycle became more regular. The author agrees with Horning, who believes that in the hemostatic mechanism of irradiation of the spleen a decomposition of thrombocytes in the spleen plays a part, but the author does not think that secretory factors are involved. Although the aforementioned cases of juvenile hemorrhages seem to suggest such an secretory effect, the failure

of irradiation of the spleen in many hemorrhages that were caused by hyperplasia disprove it. The author directs especial attention to the value of irradiation of the spleen in hemorrhages caused by myoma. He points out that the irradiation of the myomas often fails to produce prompt cessation of the hemorrhages, while the irradiation of the spleen quickly effects hemostasis, probably by increasing the coagulation ferment. In view of its rapid action, simplicity and harmlessness, he advises irradiation of the spleen for hemorrhages caused by myoma in patients in whom the removal of the myoma is contraindicated. Since the irradiation of the spleen produces only a temporary hemostasis, efforts must, of course, be made to exclude the cause of the hemorrhage. Irradiation of the spleen need not be restricted to cases of myoma but can be used also in refractory climacteric hemorrhages, provided the essential cause of the hemorrhage is excluded by other methods. The technic of the irradiation is simple. The author employs 180 kilovolts and 6 milliamperes and applies three tenths of the unit skin dose to a field 6 by 8 cm in the left hypochondrium, at a focus-skin distance of 40 cm.

Wiener klinische Wochenschrift, Vienna

50 1171 1194 (Aug 13) 1937

- New Guiding Principles in Surgery R Leriche—p 1171
 *Influence of Season and of Nutrition on Morphine Habituation and Morphine Withdrawal C Amsler—p 1175
 *Actinomycosis Cured with Specific Convalescent Serum Cases E Neuber—p 1176
 Injuries of the Eyes Caused by Skiing A Pollat—p 1178
 Tularemia W von Schösser—p 1179
 Elementary Bodies in Malignant Tumors F Gerlach—p 1180
 Heart Disease in Children A F R Hecht—p 1180

Season and Diet in Habituation to Morphine—Amsler made animal experiments on morphine addiction in different seasons of the year and in the course of "acid" and "alkaline" diets. In experiments on guinea-pigs he found that during the spring and in the course of an acid diet the morphine habit developed in from two to two and one-half weeks, whereas during the fall and in animals receiving an alkaline diet from four to five weeks was required for the development of the morphine habit. In the breaking of the morphine habit the difference was not so great, but during the fall and during an alkaline diet the habit could usually be broken in from nine to twelve days, whereas it required from fifteen to eighteen days in the spring and during acid diets. Thus the results of these tests corroborate the expectation that in animals in which the tonus of the sympathetic nervous system is increased the forming of the morphine habit is more rapid and the breaking more difficult than in animals in which the tonus of the parasympathetic nervous system predominates. Since the calcium metabolism is influenced negatively by an acid diet and positively by an alkaline diet, it is suggested that calcium and vitamin D are important factors in the prevention and breaking of the morphine habit. In the conclusion the author points out that patients who have to be given morphine over longer periods should be put on an alkaline diet and, if necessary, should also receive calcium.

Actinomycosis Cured with Convalescent Serum—Although the combined administration of gold and specific vaccine had produced favorable therapeutic results in many cases of actinomycosis, Neuber nevertheless decided to try convalescent serum, having found the convalescent serum method highly effective in cases of erysipelas. He reasoned that the convalescent serum would be especially helpful in severe cases of actinomycosis in which the toxic condition makes active immunization and chemotherapy undesirable. He first resorted to convalescent serum in treating a patient who responded only slowly to the treatment with gold and specific vaccine. The intragluteal injection of 40 cc of convalescent serum produced a severe focal reaction, which subsided after three days. One week later the injection of convalescent serum was repeated. The reactions after this injection were much weaker, but the curative process was greatly accelerated. The author decided to try convalescent serotherapy also in patients who had received no other treatment. He describes several cases in which the convalescent serum produced favorable results but he admits that observations on a larger material will be required before a definite evaluation will be possible. He admits that in view of the comparative rarity of actinomycosis it might

prove difficult to obtain convalescent serum but thinks that this problem could be overcome by referring these patients to a central institute. But even in such a central institute the patients should be divided into two groups, one to be treated with gold and specific vaccine and the other with convalescent serum, for it has been observed that patients who have been treated with convalescent serum produce specific protective substances only in inadequate quantities, and the serum of such patients would not be so effective for use in other cases of actinomycosis.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

81 3922 4008 (Aug 14) 1937 Partial Index

- Cough Remedies U G Buijsma—p 3922
 *Treatment of Schizophrenia According to von Meduna G Kraus F Van Der Meulen and J M Rombouts—p 3931
 *Treatment of Morbus Maculosus Werlhoffii and of Other Thrombopenic Forms of Purpura C G Vervloet—p 3940

Treatment of Schizophrenia According to von Meduna—Kraus and his associates direct attention to the newer treatments of schizophrenia, particularly to the treatment of von Meduna, which is based on the theory of an antagonism between schizophrenia and epilepsy. Accordingly, von Meduna decided to induce epileptic attacks in patients with schizophrenia at first by means of oil of camphor and later by the intravenous injection of metrazol (a synthetic product of pentamethylene tetrazol, which is used like camphor). The initial dose for women is 4 cc of the 10 per cent solution of the camphor substitute and for men 5 cc. The patients are given two injections every week. The initial dose is given as long as it elicits attacks, if it fails to do so it is increased by 1 cc. The injections produce therapeutic effects only if they elicit the epileptic attacks. After pointing out that von Meduna produced favorable results with this treatment in fifty-four of a total of 110 cases the authors describe their own experiences with the method. They cite some cases in which it produced favorable results, others in which, after a temporary improvement, the psychosis exacerbated but after renewed treatment improved again. Then they show that numerous problems remain to be solved and that a definite evaluation of von Meduna's method is as yet impossible but that it nevertheless has considerable practical importance because in numerous schizophrenic patients it produces results that have been impossible heretofore. Early diagnosis is important and in cases of schizophrenia that have been recognized early either von Meduna's treatment or that of Sakel should be instituted.

Treatment of Hemorrhagic Purpura—Vervloet shows that in a case of thrombopenic purpura the intravenous injection of vitamin C had no immediate success but injections of liver extract and the oral administration of liver repeatedly produced prompt cessation of the hemorrhages. Fresh bone marrow from calves, when given in quantities of about 2½ ounces (70 Gm) daily, was found to exercise a strong therapeutic influence. In other cases the intravenous injection of calcium or the oral administration of calcium salts produced favorable effects. The efficacy of these widely differing therapeutic measures can be understood if it is considered that the mechanism of blood clotting is highly complicated. In some cases the action of several factors is required.

Ugeskrift for Læger, Copenhagen

99 801 824 (July 29) 1937

- *Pneumonia Studies I Occurrence of Pneumococcus Types Especially in Sputum of Patients with Pneumonia N I Nissen—p 801
 Nodding Sp m G Østerberg—p 806
 Heart Infarct Demonstrable Only in Fourth Lead H Nielsen—p 809
 Tuberculosis and Immunity W Lester—p 812
 Transplantation of Hypophysis Review J Christiansen—p 815

Types of Pneumococci in Sputum of Patients with Pneumonia—Of the 192 strains from the sputum of patients with croupous or bronchial pneumonia out of 300 type identified strains of pneumococci tabulated by Nissen, the predominating types were I, present in 35.9 per cent, VII in 10.4, III in 9.4 types were VI in 7.3, IV in 5.2, and VIII in 4.7 per cent. In rubiginous sputum from eighty-three patients, pneumococcus types I, VII, IV and III were most frequent type-specific agglutinins in the blood were established with rising and falling titer in the cases in which types I, IV and VII appeared in the sputum.

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ACUTE ABDOMINAL CATASTROPHES

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The surgical lesions occurring in the abdomen which may assume catastrophic proportions are many, the term "acute conditions of the abdomen" has been employed to designate the group urgently demanding surgery for their relief. Many of them present symptoms of such similarity that preoperative clinical diagnosis becomes a matter of difficulty and at times accurate distinction between them is quite impossible. The common indication in such lesions is surgical relief, this being true, it is apparent that the first duty of the physician in a given case is to determine for or against its employment.

The rapidity with which the disastrous changes in the abdomen develop make it imperative that this determination be made at a time that gives the patient the greatest chance for recovery. Regarded in this light the final differential diagnosis of the cause, though of the utmost importance, must take second place if the mortality from catastrophic lesions is to be diminished. To open the abdomen in a patient presenting acute symptoms and on examination find that the operation was unnecessary is admittedly bad surgery and an admission of diagnostic failure, in condoning such a mistake it is submitted that the mortality of the group of lesions under discussion will not be lowered unless one is prepared to perform a laparotomy without waiting for a detailed diagnosis and willing to risk an unnecessary one rather than disregard the suspicious signs that may indicate the early and immediate stage of a condition convertible by delay into a disaster.

APPENDICITIS

A survey of hospital statistics reveals that appendicitis is responsible for fully 50 per cent of emergency abdominal operations. Typical cases of this disease seen early present no problem either in diagnosis or treatment. The fact that the mortality from this disease has shown a yearly increase from 11,000 in 1920 to more than 20,000 at the present time is conclusive evidence that patients afflicted with it do not come under observation or at least to surgical treatment at a time when its relief is a simple procedure. Self medication and ignorance regarding the significance of abdominal pain on the part of the public combined with procrastination and difficulty in the recognition of atypical cases on the part of the profession bring about the problems which delay in the institution of appropriate treatment entails. With a normal embryologic

development the appendix comes to rest at what by common usage is designated McBurney's point. Three variations from the normal allow the appendix a wide latitude in location, it being found in every part of the abdomen except the left upper quadrant, these are, first, a failure of rotation of the cecum, which, depending on its degree, places the organ at any point along an arc extending from the midpigastrium to the liver and thence downward to the right iliac fossa, second an unusually long mesocecum, giving to the cecum a wide circle of mobility, and, third, the rare anomaly of transposition of the viscera. The atypical situations of the appendix becloud the diagnosis in the event of its inflammation, one's attention naturally being directed to the organs normally found in the respective localities mentioned. Other causes of delayed recognition are presented by the deviation of symptoms when the situation of the appendix is retrocecal, particularly when there is an absence of the meso-appendix, the organ being practically extraperitoneal, and when, owing to a long mesocecum, it is located in the pelvis, the absence of localized tenderness and rigidity may lead to delay while the sequence of pathologic events in the appendix remains unchanged. The sequence of symptoms consisting of pain, nausea, vomiting, fever and leukocytosis should put one on guard and direct suspicion to an atypically situated appendix when such symptoms cannot be definitely ascribed to an organ normally located at their point of origination.

Recognition of appendicitis during infancy and childhood is not always an easy matter, the symptoms are the same but the child is not a miniature adult, it lacks cooperation, the blood count shows wide fluctuations and until about the fourth year constantly shows a relative lymphocytosis, the disease here, as in the opposite extreme of life, is prone to run a rapidly destructive course. Muscle spasm is elicited with difficulty, and tenderness frequently can be best elicited on rectal palpation. When, from whatever cause, delay has allowed the development of gangrene, spreading peritonitis or diffuse suppurative peritonitis to develop, problems are presented on which there is a wide diversity of opinion. Time forbids an analysis of the arguments, results and statistics of the proponents of the immediate and the delayed operation, the type of operation and the question of drainage. My practice has been and is to regard such conditions as emergencies, not that the patient should be subjected to operation immediately on arrival at the hospital, since peritonitis does not spread with such rapidity as to forbid restoration of fluid chloride and glycogen balance before operation is undertaken but that removal of a depot of necrotic, virulently infected tissue, accomplished gently without undue trauma to exposed peritoneal surfaces under spinal ethelene or cyclopropane anesthesia, with or without

drainage as the case demands, not only meets the pathologic indications but in my experience has afforded the best chance for recovery

OBSTRUCTION

Intestinal obstruction continues to cause a mortality which is a serious indictment of both diagnostic ability and surgical initiative. It is common knowledge that while acute intestinal obstruction carries an inevitable mortality, the greater proportion of it may be justly attributed to delay in recognition and to tardiness in the institution of appropriate treatment. The most important single factor is the element of time, a second one of great moment is offered by the site and character of the obstruction, whether high or low, the former pursuing a more rapidly fatal course than the latter. The research workers by their physiochemical studies of the body fluids have afforded much valuable aid in the appreciation of the changes in body chemistry with the indication of means to assist in the restoration of the latter, but the underlying fact, with which all adjutants must be correlated is that the obstruction is mechanical and must needs be corrected mechanically. The solution of the problem in the early hours when but simple obstructions are present may require nothing further, with the incidence of the complications dependent on strangulation and toxemia, which invariably follow the continued presence of obstruction, the relief of the obstruction becomes but one of the indications to be met and the risk of any operative procedure is enormously enhanced. The external obstructions in the shape of strangulated hernias present not only the classic symptoms but give visible evidence of their presence and hence do not offer any problem in recognition. The internal obstructions are hidden from view and are obscure to palpation, to await the onset of symptoms which afford indisputable proof of their presence in an effort to make a differential diagnosis is but to lose invaluable time in combating the approach of dissolution. The presence of abdominal pain, nausea, vomiting and constipation with an absence of fever and leukocytosis should put the burden of proof on the attendant to show that no obstruction exists. The history, particularly if previous abdominal ailments or operations are indicated, the physical examination showing the presence of active peristalsis visible or audible, with a flat roentgenogram competently interpreted with reference to fluid levels and distribution of gas, in addition to the three cardinal symptoms of pain, vomiting and constipation will permit of a diagnosis before the accession of fever, leukocytosis, distention, paresis and profound blood changes indicate the patient's condition to be one of extreme gravity.

The preparation of such patients is most important and will depend on their condition on admission to the hospital, when the patient is dehydrated, lost fluids and chlorides are to be replaced, and when debilitated, resistance increased by transfusion before operation is undertaken.

The type of operation must be suited to the local lesion and to the patient's condition, release of obstructing bands and adhesions, resection of tumors by the one or two stage methods, resection of gangrenous intestine with end to end anastomosis or exteriorization as a shotgun barrel enterostomy, enterostomy above the obstruction alone, or combined with the removal of the latter, all find their place in the various phases and stages of obstruction. Intussusception is characterized by symptoms which rather readily distinguish it from

other forms of obstruction, namely, age incidence, bloody stools and a palpable mass. The common or ileocolic variety is seen in infants, the rarer colocolic is occasionally observed during childhood, and a still rarer variety may be noted at any age and at almost any point of the intestinal tube as the result of perverted peristalsis dependent on an intra-intestinal neoplasm. It seems trite to state that diagnosis should be made on the three cardinal symptoms mentioned before distention beclouds the picture, and appropriate treatment applied before gangrene renders difficult or impossible its successful accomplishment. When confronted with evidence of obstruction, it may be well for one to remember that during infancy intussusception is the common cause, that during early adult life hernia and peritoneal adhesions are responsible for the majority, while in late adult life carcinoma becomes the greatest causative factor.

ULCER

The complications of peptic ulcer urgently demanding treatment are hemorrhage and perforation. Hemorrhage rarely presents as an emergency requiring operation for its control but does at all times call for urgent and appropriate treatment, occasionally being of such massive extent as to lead to an immediate fatality. Acute perforations give rise to agonizing pain with coincident nausea and vomiting, the abdominal musculature assuming a boardlike rigidity. Primary shock may be present or absent, when primarily absent or the patient is seen during the stage of reaction, a normal temperature and pulse may lull one into a sense of false security. Delay in diagnosis and treatment at this stage is but to invite disaster, with the appearance of symptoms indicating a spreading peritonitis, the favorable time has passed and the grim specter is in the offing. With or without a history of digestive disturbance indicating ulcer, the sudden onset of pain, the tenderness and rigidity of the abdominal muscles, the shallow, costal type of respiration, the tenderness of the pelvic peritoneum when elicited and the presence of gas as shown by the flat x-ray film should enable one to make an early diagnosis. My experience with acute perforations doubtless parallels that of other surgeons, I have lost no patient operated on within six hours after perforation and have saved but one operated on twenty-four hours or longer after perforation, within these time limits the mortality shows a progressive increase with each added hour of delay. Closure of the opening with superimposed layers of Lembert sutures and an omental fat graft suffices not only to control leakage but in a goodly percentage to secure healing of the ulcer as well. The employment of additional measures such as excision or cauterization of the ulcer, pyloroplasty, gastroenterostomy or resection of the stomach will depend on the extent, character and location of the local lesion and the general condition of the patient. The prime consideration in such catastrophes is the saving of life, this is accomplished by the stoppage of the leak. It may be stated as a general rule that the greatest safety to the greatest number prohibits doing more, yet in the presence of marked pyloric or duodenal obstruction, granting that the condition of the patient permits, additional measures may be undertaken with reasonable safety, giving assurance of relief and obviating a second operation.

DIVERTICULITIS

Diverticulitis occurring in Meckel's diverticulum and obstruction having its origin in the various forms of this vestigial remnant have been long recognized.

occasional causes of acute abdominal catastrophes, during the present century diverticula in other portions of the intestinal tract have come to be known as acting in a similar capacity, while hemorrhage and perforation complicating peptic ulcer in Meckel's diverticulum are being reported with increasing frequency. None of the symptoms dependent on the presence of diverticula and their complicating disease, with the exception of those at the pharyngo-esophageal junction, are pathognomonic and a differential diagnosis cannot be made on clinical evidence alone. Diverticula other than Meckel's are readily revealed by the x-ray film but it is not always advisable to employ the barium sulfate meal or enema in the presence of their disastrous complications. The symptomatology of the inflammatory lesions of Meckel's diverticulum and of single diverticula situated elsewhere closely mimics that of the appendix and oftentimes clinically is not distinguishable from it, consisting of pain, nausea, vomiting, localized tenderness and rigidity with an increased leukocyte count. The complications readily convertible into catastrophes are acute diverticulitis, suppurative peridiverticulitis, perforation with diffuse peritonitis and obstruction. Their surgical treatment does not differ from that of similar pathologic lesions dependent on other causes.

PANCREATITIS

Acute pancreatitis is an infrequent cause of abdominal catastrophes, being responsible for less than 1 per cent of such cases. Its rarity and the similarity of its symptoms to those of perforated peptic ulcer and of gangrenous and perforative cholecystitis and in its later stages to those of intestinal obstruction account for the infrequency of correct preoperative diagnosis. Clinically it appears as acute pancreatic edema, acute pancreatic necrosis, acute hemorrhagic pancreatitis and pancreatic abscess, which are not separate clinical entities but represent different stages of the same process, the origin of which is not entirely clear. There are no pathognomonic symptoms, the most important encountered being pain, vomiting and collapse. Laboratory examinations are not of great aid in reaching a diagnosis, the white cell count in our series of thirty-one varied from 5,300 to 26,000, the urine in all showed albumin, none showed sugar, bile, casts, microscopic pus and blood were noted. The liberation of the pancreatic ferments leads to an increase in the amount of diastase in the blood and urine, the urine normally contains from 10 to 20 units of diastase, in acute pancreatitis this may be increased to 100 or 200 units, constituting a reliable corroborative symptom when laboratory facilities for its determination are available. Previous history of gallbladder disease, pain radiating from the right costal margin across the upper part of the abdomen, tenderness following the course of the pancreas, pain and tenderness to the left of the upper midline and detection of a mass in the pancreatic area are beacon lights when elicited. After all it is not so important to make a correct diagnosis of acute pancreatitis as it is to make a diagnosis of an acute surgical lesion in the upper part of the abdomen, the predominance of symptoms at and above the umbilicus will usually permit of their localization, when prompt operation will direct one to the pathologic condition. The indications are to relieve tension, to stop hemorrhage, to prevent leakage and to afford drainage. Auxiliary measures directed to the gallbladder and common duct when the condition of the patient permits, are useful procedures in promoting recovery and securing immunity from further attacks.

RUPTURED ECTOPIC GESTATION

A ruptured ectopic gestation offers a dramatic picture which should give but little difficulty in interpretation. It seems to me that in the future the aim of the profession should be to prevent this complication by making an effort to recognize and remove an ectopic gestation before its rupture. Rupture of the sac is accompanied by sudden abdominal pain, at times vomiting, usually faintness, anemia and collapse, the pulse is rapid, of small volume and the temperature is subnormal. The abdomen is tender but not rigid, vaginal examination reveals a tender pelvis with or without a palpable mass and at times percussion will reveal free fluid in the abdomen. Severe hemorrhage from a ruptured graafian follicle gives a similar clinical picture, but the accompanying evidences of pregnancy are lacking, indications for treatment in the two conditions are identical. It has been argued in some quarters that death from hemorrhage does not occur and consequently that cases of ruptured ectopic gestation should be treated expectantly until full recovery has occurred from the primary shock and depression. It is readily admitted that in some cases the shock and depression are out of all proportion to the direct blood loss, clearly indicating that in such cases factors other than hemorrhage play a rôle and that delayed operation in such instances may lessen the hazard to the patient. It is further admitted that, if at the time the patient comes under observation there is evidence of cessation of bleeding, delayed operation may again be advantageous. On the other hand, it is submitted from personal knowledge that patients do die from primary hemorrhage, it is further submitted that it is impossible to distinguish on clinical signs alone the case in which the alarming symptoms are largely due to shock from the one in which they are largely due to hemorrhage. The blood count cannot be relied on for an accurate estimate of blood loss because of fluid concentration, hence unless the lapse of time since the onset of symptoms and the condition of the patient plainly indicate that cessation of bleeding has occurred, it has been my practice to rehabilitate the patient with transfusion and to do an immediate operation.

CHOLECYSTITIS

Acute cholecystitis furnishes an instance of the acutely involved abdomen about the proper treatment of which there is as yet no unanimity of opinion. Typical cases are readily recognized, the atypical ones as readily confounded with appendicitis, leaking peptic ulcer and pancreatitis. Difference of opinion arises when the question of their consideration as surgical emergencies is approached, gangrene and perforations readily fall within this category, but the advisability of early or of delayed operations in acute inflammations of the gallbladder finds both proponents and opponents. To review the arguments for and against and to survey the statistical results are beyond the scope of this paper. My own belief and practice is to place the acute obstructive type of cholecystitis in the emergency class, since 95 per cent of all cases of gangrene and perforation occur in this group. The infectious type of cholecystitis without obstruction does not carry with it much threat of these complications, both empyema and hydrops are chronic obstructive lesions and are relatively free from such dangers and hence offer some basis for the arguments of those who would place them in the elective group. With coincident blockage of the cystic duct and the presence of active infection in the gallbladder, delay only too often invites the appearance of complications.

which not only enhance the danger to the patient but increase the technical difficulty of a subsequent operation. Gangrene, perforation into the liver with the formation of a hepatic abscess, perforation through the free surface with resultant diffuse peritonitis, or if walled off by adherent adjacent viscera, the production of a subhepatic abscess, cholangitis, hepatitis and pancreatitis all follow in the wake of acute infection in an obstructed gallbladder, their prevention by early operation will give both a lower morbidity and a lower mortality than the expectant plan of treatment with delayed operation. To consider them as emergencies does not prohibit the expenditure of some hours in buttressing the liver with dextrose, in correcting the deviations in body chemistry and in restoring the proper balance in body fluids.

COMMENT

While it is vitally important to recognize and act on symptoms urgently indicating surgical intervention in acute abdominal catastrophes, it is equally important to appreciate the source of threatening symptoms caused by conditions not amenable to surgery. A good general rule is to regard the presence of pain, nausea, vomiting and constipation for as long as six hours as indicative of an intra-abdominal surgical lesion until proved otherwise, while the absence of constipation and the presence of diarrhea usually betoken medical rather than surgical illness, they cannot be accepted as positively excluding the latter. A well taken history combined with a complete physical examination and an analysis of the blood and urine should be given every patient presenting acute abdominal symptoms, by so doing one may hope to avoid the pitfalls in diagnosis in differentiating between surgical lesions and medical ailments which simulate them. Among the latter to be borne in mind are the abdominal crises of lead poisoning, the gastric crises of tabes dorsalis, diabetic acidosis, diaphragmatic pleurisy and incipient or central pneumonia, coronary thrombosis, renal and ureteral calculi and lesions of the female pelvic organs, particularly salpingitis in unmarried girls. All of these should be rather readily recognized on a careful diagnostic study.

321 West Broadway

ABSTRACT OF DISCUSSION

DR FRANK H. LAHEY, Boston. I don't know any subject that needs stressing more than the subject of acute conditions of the abdomen, and I don't know any one better qualified to do it than Dr. Abell. I should like to bring out a few additional facts. One is the question of peptic ulcer hemorrhage. Surgeons, and certainly gastro-enterologists, easily get the point of view that the undesirable time to operate on a patient with a gastric or duodenal hemorrhage is when he has a hemorrhage. That is the time when the vascular balance is upset, when the patient is easily shocked, and when relatively extensive operative procedures must be undertaken. There are two types of hemorrhage from ulcer, one which will cease spontaneously, which is repeated only once or twice, and the other type of repeated massive hemorrhage which has gone on and in a certain number of cases will go on to a fatality. Here can be displayed the highest degrees of surgical judgment and diagnostic acumen in selecting the type for surgical intervention because here the hazard is tremendous yet justifiable. In the patients going progressively downhill, with repeated hemorrhage, even though the mortality is 50 or 60 per cent, it is justifiable to open the abdomen and inspect a duodenal ulcer to see whether or not it can be removed by radical pylorotomy. This is a horrid operation to look at, a tearing out of the duodenum, but the bleeding vessel can be tied and can be controlled. At times the patient

will not stand this procedure and it is justifiable to incise the pylorus, demonstrate the ulcer and transfuse it with silk and do a gastro-enterostomy. I don't know what there is about a rectal examination, but the doctors don't like it and neither do the patients. I have made more mistakes by omitting a rectal examination than by the omission of any other diagnostic feature in connection with abdominal diagnosis. Here the pelvic abscesses, here the pelvic appendices hanging in the pelvis, that do not show through abdominal palpation, can often be demonstrated. Here many a patient with a carcinoma of the stomach which seems operable will be found to be inoperable by the demonstration of the nodules of malignancy in the pouch of Douglas. The question of uterine pregnancy can be settled very simply without an abdominal operation. The patient can be put up in stirrups and a simple vaginal puncture will demonstrate the presence of blood in the pelvic cavity. Dr. Abell has mentioned Meckel's diverticulum. The necessity of searching for regional ileitis should be kept in mind, and it is important that gastro-enterologists should urge radical removal of this lesion on their surgical friends, lest they become too conservative. In my hands, resection has been done in sixteen out of nineteen of these cases, and all the patients are well. Whenever I have done the conservative operation, I have been sorry. Given regional ileitis, resection, provided the patient's condition will permit, is, I believe, by far the best procedure. The more experience I have with acute cholecystitis, the more I lean toward immediate operations and total removal when it can be done with safety.

DR ROBERT LEE PAYNE, Norfolk, Va. Most of the cases present acute problems and the patients are so desperately sick that diagnosis is often impossible. The first practical point is the blood count. In most of these cases I find that the total white count is low, indicating more or less embarrassment or toxic paralysis of the activity of the bone marrow, and a high neutrophil count. The practical point is to determine the presence of toxic granulation in the neutrophil. If there is a marked toxic granulation in the neutrophil one may be reasonably sure that the patient's resistance is extremely low and that the possibility of doing something for him is very bad. The next point is the use of morphine. The common knowledge prevails that morphine is given these patients before they come to us, thus making the diagnosis obscure. In the evaluating of symptoms such an abdomen presents, there are two reflexes to consider, the central reflex to the brain and the spinal reflex. The spinal reflex cannot be obliterated by morphine, but the central reflex of pain for the higher centers can be if one will study these patients for a few minutes most carefully and get in one's mind a fixed picture of what that abdomen shows and then give the patient sufficient morphine, one fourth, one half, three-fourths or even 1 grain, to obliterate completely the higher sensory reflexes to the brain, one can often go back in thirty minutes and go over that abdomen and define accurately the location of the lesion. The author has said that our principal responsibility is to afford surgical relief in these cases. It is equally important to know when not to operate, because surgery is often deprecated in the mind of the layman when so many of these patients die, because they were operated on as a last resort. My experience has taught me that if a correct diagnosis cannot be made beforehand one may expect about a 50 per cent increase in mortality over those cases in which a correct diagnosis can be made. A word about cholecystitis. In an analysis of 355 cases, I found sixty-five classified as real, acute cholecystitis and of these twenty-nine were gangrenous. The mortality in these twenty-nine cases after cholecystectomy was two, or 10 per cent. If there are going to be twenty-nine gangrenous gallbladders in sixty-five acute cases of cholecystitis, it is clearly indicative of the fact that these cases come into the surgeon's care too frequently at a late stage.

DR HARVEY B. STONE, Baltimore. Dr. Abell's opinion that a prompt operation in most of the various phases of acute appendicitis is advisable seems to me the wise principle to adopt particularly when qualified by his advice as to measures for rehabilitation of the patient's general condition, and skill and gentleness in technic. The author's emphasis on the

necessity for prompt and early operation in acute mechanical intestinal obstruction strikes a most responsive chord also. The administration of intravenous fluid, salt and dextrose and the decompression of the upper alimentary tract by catheter and suction have proved great aids in the treatment of obstruction, but their very value has had a tendency, which I regard as dangerous, to cause them to be considered reasons for deferring operation. They are accessory measures that should be instituted before, during and after operation, but the essential treatment of the condition is the prompt surgical relief of the obstruction itself. There has recently developed a feeling with regard to acute pancreatitis that some modification should be made in the accepted treatment which Dr Abell has set forth in his paper. This view holds that the fulminating cases cannot be helped by drainage or any other surgical procedure, and the less intense forms of the disease, if let alone, may subside into a state at which later operation is helpful but may be accentuated by premature surgical intervention. A certain amount of clinical evidence is adduced to support this position. The statements of Dr Abell about perforated peptic ulcer, diseases of diverticula and ruptured ectopic pregnancy present a clear and sound surgical view of these catastrophes, and, while individual opinions may differ on some details, his summary represents accurately the present prevailing ideas. His comments on the treatment of acute conditions of the gallbladder is particularly pleasing to me, as I have for some years been a convert to the prompt operation school of thought in this group of lesions. Of great importance is the emphasis he has placed on the necessity to think of, examine for and, if possible, exclude conditions that may mimic surgical disasters. As surgeons grow in experience and judgment, they become increasingly reluctant to operate without concrete and convincing reasons. The surgical beginner, tortured by the quite conscientious fear of concealed damage rapidly growing worse, may feel forced to explore an obscure case in which a more mature surgeon, estimating all the elements of the situation, including the general condition of the patient, will feel safe in waiting longer in the hope that the uncertainties will clear up.

DR SAMUEL MOREIN, Providence, R. I. This comprehensive paper and the points brought out by the discussion bring to mind the seriousness of the diagnosis of an acute abdominal emergency which may become a catastrophe. I have in mind spontaneous pneumothorax. This condition does not frequently present symptoms of an acute abdominal emergency, however, on occasion it may. Given a patient with symptoms of dyspepsia of many years' duration with a positive diagnosis of peptic ulcer and lacking any previous history of pulmonary disease an emergency call from him presenting symptomatology of an acute abdominal condition and no symptoms with reference to the chest will lead one to assume that a perforated peptic ulcer exists. Recently I had occasion to see two such cases. In both there were practically no symptoms with reference to the chest and what saved these two patients from unnecessary surgery and possibly saved their lives was that further attention was paid to the chest before calling a surgeon. X-ray examination, merely a flat plate, disclosed a spontaneous pneumothorax on the right side in each instance. A little conservatism had meant the saving of the lives of these two patients. I agree with Dr Lahey that more rectal examinations may mean the saving of these patients from unnecessary surgical intervention. In my opinion a more frequent use of the stethoscope also, instead of centering entire attention on the abdomen, not overlooking the fact that the X-ray examination is important, will supply valuable information.

DR HIRSH I. GOLDSTEIN, Camden, N. J. I wish to report the occurrence of massive bleeding from the stomach in two patients, of the same family, neither of whom required surgical intervention for their repeated hematemesis or gastrorrhagia (telangiectatic gastrostasis or bleeding due to gastric telangiectatic dysplasia). These patients gave a history of the usual hereditary epistaxis and widely scattered telangiectatic lesions similarly affecting many members of the family. In one of these patients telangiectases were seen proctoscopically.

These patients should never be operated on for the bleeding. They are similar to those reported by Dr Abell. Injections of moccasin snake venom and the oral administration of solution of Russell viper venom, with small blood transfusions when necessary, are helpful in these cases. The second matter to which I wish to call attention concerns the records of two fatal cases of terminal or distal ileitis, "Combe-Saunders-Abercrombie's disease," or what has in the past five years been referred to as "Crohn-Ginzburg-Oppenheimer's distal ileitis," if an eponym is to be used for this definite clinical entity. On July 4, 1806, before the Royal College of Physicians, of London, Charles Combe and William Saunders reported a typical fatal case of terminal ileitis with 2 or 3 feet of the intestine involved, under the title "A Singular Case of Stricture and Thickening of the Ileum." John Abercrombie (1780-1844) reported a case in a girl, aged 13, with about 18 inches of the lower end of the ileum involved. The lungs and all other viscera were healthy. If we are to continue to use an eponym for this clinical entity, let it be Saunders-Abercrombie-Crohn's disease.

DR M. G. WOHL, Philadelphia. There is one phase in the diagnosis of acute abdominal catastrophe that should be stressed. There are patients with metabolic disturbances who may present abdominal symptoms which will often mimic intra-abdominal lesions. I refer particularly to the acidosis of diabetes mellitus, in which condition the nausea, the vomiting, the abdominal soreness and even the leukocytosis and fever will often prove confusing in a differential diagnosis. In hyperthyroidism patients may likewise exhibit acute attacks of vomiting, and abdominal pain which may erroneously be construed as due to an acute intra-abdominal surgical lesion. Drs W. E. and H. F. Robertson and I recently reported three such cases that came under observation at the Philadelphia General and Temple University hospitals, in which the abdominal symptoms were so severe as to suggest a surgical abdominal catastrophe. One of these patients, after several consultations with one of the leading surgeons in Philadelphia, was operated on for an appendiceal abscess. A normal appendix was found. A second patient at postmortem failed to show any abdominal pathologic condition to account for the severe abdominal symptoms that were interpreted as a surgical abdominal catastrophe. It is worth emphasizing that in an acute abdominal catastrophe, if the patient is known to be a victim of a metabolic disorder, the abdominal symptoms may be referable to this metabolic condition rather than to a surgical lesion. If this is borne in mind, the grave risk of an unnecessary exploratory operation in such patients will be avoided.

DR JOHN FALLON, Worcester, Mass. I have a minor suggestion for the diagnosis of extra-uterine pregnancy. The patient with extra-uterine pregnancy who comes in during a massive hemorrhage is not an especial diagnostic problem. The woman entering for acute abdominal symptoms, with a history of something that may or may not have been a hemorrhage a few days before, is the puzzle. My colleague Dr J. J. Dumphry and I have found an increased van den Bergh reaction in two thirds of about fifty patients seen in this stage, that is, if enough hemoglobin has been broken down and reabsorbed from the pelvis, the blood bilirubin is appreciably raised.

Garrison and Music.—No matter on what subject Garrison was writing, somehow he had to bring in music and then of course Brahms. His countless editorials and articles are full of excursions into the field of music. Garrison's skill in bridging history with art is to a large degree responsible for the distinctive, rich style of his writings. His prose often attains rare beauty and sweeping forcefulness. There can be found sentences in his writings which "compass the whole inner rhythm of life and passages which take the reader on a whirlwind tour through the arts of all ages. Then again there are charmingly loquacious reflections of a resigned, sadder but wiser man. Dull and dry he never could be.—Tietsch, F. L. The Colonel Played the Piano, *Bull Hist Med* 5:360 (April) 1937.

EXPERIENCES IN THE INSULIN-
HYPOGLYCEMIA TREATMENT
OF SCHIZOPHRENIA

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Schizophrenia, by reason of the incapacity which it produces and by reason of the fact that it is essentially a chronic disease with a comparatively low direct mortality rate, is one of the most serious disorders, both from the individual and from the economic point of view. The actual expectation of schizophrenia in the general population is not high, amounting, according to Sjogren,¹ to from 0.38 to 0.98 per cent. The admission rate is in the neighborhood of 25 per cent of all first admissions to mental hospitals. From 1917 to 1934 in the state of Massachusetts² the percentage fluctuated from 20 to 27.8. Because of the chronicity of the disorder, however, schizophrenic patients occupy one fifth of all the hospital beds in the United States, reckoning in general hospital as well as in mental hospital beds.³

The spontaneous remission rate has been variously computed at from 20 to 40 per cent. Factors that have a bearing on this variation are the length of time on which the calculation is based and also whether the cases were early ones coming to clinics or later ones coming to mental hospitals.

In view of the fact that therapeutic procedures are most efficacious when applied early, it is important that the onset of the disorder be promptly recognized. This is often insidious. A common early symptom is a growing loss of social interest, the patient preferring to stay at home rather than go out and "mixing." There is growing indifference to the people about him and toward his former interests. Undue suspiciousness may appear, as when the person begins to feel that others do not care for him or that they are talking about him. There may be gradual failure in work, resulting partly from growing indifference and partly from failure in concentration. The latter symptom is one of which the individual himself often complains, saying that he can no longer follow out his train of thought or that he cannot keep track of what he has been reading. Odd mannerisms or ways of acting may appear and these seem to cause the patient very little concern. There may be undue worrying over his physical condition, and this is especially suspicious when the complaints are unusual and unlikely. These complaints often go together with statements by the patient that he feels he ought to build himself up by means of dieting and exercise. Less frequently one notes the appearance of new interests which seem to be out of line with the patient's personality, such as sudden religious activity, sudden interest in rather unusual topics such as philosophy and metaphysics, and sudden determinations to cut himself off from the world and to be especially pure and apart from others.

The Eli Lilly Company of Indianapolis gave generous supplies of insulin.

From the Research Service of the Worcester State Hospital and the Memorial Foundation for Neuro-Endocrine Research.

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¹ Sjogren, T. Investigations of Heredity of Psychoses and Mental Deficiency in Two Northern Swedish Parishes. *Ann. Eugenics* (pt. 3) 6: 253-318 (Dec.) 1935.

² Massachusetts Department of Mental Diseases. Annual Report 1934.

³ Hoskins, R. G. *Dementia Praecox*. J. A. M. A. 96: 1209-1211 (April 11) 1931.

Agents have been found in recent years that will produce marked ameliorations, but the improvements have been, for the most part, very fleeting. In 1933 Manfred Sakel⁴ introduced the insulin treatment of schizophrenia. He claimed exceptionally high recovery rates. He stated that in early cases, and by this he meant cases in which not more than six months had elapsed since the first changes were noted, it was possible to produce full remissions in 70 per cent. In addition, he asserted that a further 18 per cent could be sent home fit to carry on their work although not fully restored to health. Since that time further series of cases have been reported by Sakel⁵ and Dussik and Sakel,⁶ by Muller⁷ in Switzerland, by Benedek⁸ in Hungary and by Berglas and Sušic⁹ in Czechoslovakia. All these workers report very high remission rates, the majority of them being as high as those reported by Sakel. Various smaller series have been produced, the majority of which have also given favorable results.¹⁰ We began the use of the Sakel method in March 1936. It is interesting to note that there is a higher proportion of unfavorable or guarded reports by writers whose series are small, a fact which suggests that experience is an important factor in obtaining the best results from this technique.

CASE MATERIAL

Six of our cases were selected as old ones, none of them being of less than four years' duration. The remaining nineteen cases were chosen as representing the most recent cases available. In seven cases symptoms were of less than six months' duration and in the remaining twelve cases symptoms had been present for from one-half to three years. Six of our subjects were women. No case was accepted in which there was any suspicion of cardiac, renal or pulmonary disorder. The age distribution was from 13 to 42 years. No attempt was made to select on the basis of reaction type or on probability of recovery. Our experience in the latter regard has been that the correlation between prognosis recorded at the time of admission and subsequent progress is almost negligible.

TECHNIC

Treatment consisted in giving insulin, 20 units, subcutaneously to the fasting patient. In some cases this was given daily and in a few twice daily. The dosage was raised by from 2 to 10 units until a clear-cut hyperinsulin reaction was produced. Thereafter the dosage was dependent on the progress of the patient. In the majority of cases dosage was increased until coma was produced. We have followed Sakel's technique closely. Our only deviation has been in a greater utilization of intravenous dextrose in terminating the insulin reaction. After extensive comparison of this method with that advocated by Sakel, namely, the administration of sugar

4 Sakel, Manfred. Schizophreniebehandlung mittels Insulin Hypoglykämie sowie hypoglykämischer Schocks. *Wien med. Wchnschr.* 81: 1211 (Nov. 3) 1265 (Nov. 17) 1299 (Nov. 24) 1326 (Dec. 1) 1353 (Dec. 8) 1383 (Dec. 15) 1401 (Dec. 22) 1934. 85: 35 (Jan. 5) 88 (Jan. 12) 94 (Jan. 19) 121 (Jan. 26) 152 (Feb. 2) 179 (Feb. 9) 1935.

5 Sakel, Manfred. Neue Behandlungsmethode der Schizophrenie. *Vienna and Leipzig*. Moritz Perles 1935.

6 Dussik, K. T. and Sakel, Manfred. Ergebnisse der Hypoglykämiebehandlung der Schizophrenie. *Ztschr. f. d. ges. Neurol. u. Psychiat.* 155: 351-415, 1936.

7 Muller, cited by Glueck, Bernard. Hypoglycemic State in the Treatment of Schizophrenia. J. A. M. A. 107: 1029-1031 (Sept. 26) 1936.

8 Benedek, Ladislaus. Insulin Schock Wirkung auf die Wahrnehmung. *Berlin S. Karger* 1935.

9 Berglas, B. and Sušic, Z. Ueber die Hypoglykämie-Chokbehandlung der Schizophrenie. *Psychiat. neurol. Wchnschr.* 38: 599-602 (Nov. 12) 1936.

10 Langfeldt, Gabriel. Die Insulin Chokbehandlung der Schizophrenie. *Psychiat. neurol. Wchnschr.* 38: 483-484 (Sept. 19) 1936. Review.

Ueberrück über die nach der Methode der Wiener psychiatrischen Klinik (Hypoglykämie Chok) behandelten Schizophreniefälle. *ibid.* 38: 433 (Aug. 22) 1936.

Friedlander, Karl. Insulin Chokbehandlung der Schizophrenie. *ibid.* 38: 520 (Oct. 10) 1936.

by nasal tube, we have been unable to note any considerable advantage in the use of the latter

The earliest symptoms of hypoglycemia usually set in within half an hour and consist in a slight drowsiness, which may increase to actual sleep. About this time or a little later some sweating appears, which later may become copious. This, together with the fact that the heat regulating mechanism appears to become impaired, sometimes results in low body temperatures. Consequently, it is necessary that the patient should be kept adequately covered. It is of interest that in spite of the low temperatures we have never noted shivering or gooseflesh save on two occasions when the patient was tending to come out of hypoglycemia spontaneously. On the other hand, shivering often sets in within a few minutes after the giving of sugar, suggesting that the heat regulating mechanism has returned to normal functioning.

At the end of from one to three hours the drowsiness begins to pass over into increasing wakefulness, which may again, after one-half hour or so, pass over into drowsiness, which in turn leads directly into coma. This usually is achieved by the third to the fifth hour after treatment is commenced. On the other hand, the excitement may become very severe and the patient's delusional ideas may become much more vivid. Excitement of this type, too, may subside into drowsiness and coma, but in a certain proportion of cases it becomes so severe and exhausting that treatment has to be terminated.

Just prior to the commencement of coma, twitching and jerking of the face and of the limbs are common. Occasionally this jerking may become increasingly severe and lead on to convulsions. It is to be noted here that, contrary to the usual textbook descriptions, convulsions when the patient is in coma are very much rarer than they are when he is on the point of entering coma.

We usually consider somewhat arbitrarily that coma is present when the patient can no longer swallow—when, if he is turned on his side, saliva tends to drool from the mouth, or when, on the eyelids being drawn up, the eyeball is found to be wandering slowly in the orbit. The pulse, which tends to increase in frequency up to the time of coma, begins to fall somewhat as coma progresses but rarely falls to the pretreatment level. The same is true in general of the blood pressure. Coma may be prolonged for varying periods from ten minutes up to about one and one-half hours, but the total duration of the treatment should not exceed five hours, as there is a very considerable danger of irreversible brain changes occurring if hypoglycemia is allowed to persist. A mishap particularly to be guarded against is to allow hypoglycemia to become reestablished while the patient is asleep and remain undetected until the following morning.¹¹

Treatment can readily be terminated by the giving of carbohydrate. When it is desirable to terminate it before the onset of coma, the patient drinks a sugar solution and then takes a high carbohydrate meal. When the patient is in coma, treatment may be terminated either by the administration of 200 Gm of sugar by nasal tube or by means of intravenous administration. On the whole nasal administration is preferable save when speed is indicated. Within a minute after the intravenous injection of from 50 to 100 cc of 25 per cent dextrose the patient is more or less

completely aroused and within five minutes may be up and walking about. It is a useful precaution to have the needle attached not directly to the syringe but by means of a piece of rubber tubing about 5 inches long. In this way, should the patient be jerking, there is less chance of the needle being pulled out of the vein. Nasal administration results in the patient coming out more slowly and he may not be fully roused for one half to three quarters of an hour. Whatever route is used, it is of the utmost importance that the patient should immediately be given a meal. Otherwise the sugar given may be burned up and the patient pass back into hypoglycemia.

It has been noted that the giving of sugar may actually increase the intensity of the hypoglycemic symptoms. We have observed indeed in cases in which treatment was terminated before coma that the mere sight of the sugar solution being brought to the patients to drink has on occasion produced an increase in sweating or has provoked it when it was not present. On several occasions, too, we have noticed that the patient has gone rapidly into deeper coma after a nasal administration of sugar. These intensifications usually last only a matter of minutes.

The essential principle of the treatment, as far as it is at present understood, consists of the fact that in general the mental state in which the patient finds himself at the time of termination of treatment tends to persist throughout the day. Consequently in excited antagonistic patients we endeavor to terminate treatment when the patient is quiet, drowsy and affable. In cases in which there are severe delusional ideas we terminate as a rule after coma has been established. If the patient is stuporous or slowed down we terminate during a period of increased activity.

It is necessary to stress that the psychotherapeutic aspect of the treatment is important. In this treatment, however, psychotherapy is based on a somewhat different principle from that which obtains in other therapy. The usual concept underlying psychotherapy is that there is a conflict between desires or fears and that this conflict is causal of the abnormal behavior. Under such circumstances it is the object of psychotherapy to find a solution by compromise or by removal of one of the conflicting trends. In insulin treatment this appears to be quite unnecessary. Indeed, the direction of the patient's attention to his psychotic behavior and a deep probing into painful experiences that are attendant on such psychotherapeutic procedures are definitely contraindicated. We abandoned this early in favor of dealing with the patient in such a way that he was kept as tranquil as possible both during the treatment and during the treatment-free periods. It is particularly important that during treatment all stimuli should be reduced as far as possible and to this end the room is kept somewhat darkened and kept as free from sound as possible.

DANGERS

As can be readily grasped from the nature of the treatment, great care and vigilance are required throughout the period of treatment. The outstanding dangers are the possibility of delayed relapse into hyperinsulinism and failure to recognize it. When vomiting occurs or when the patient eats inadequately or even when he has eaten a good—but under the circumstances, inadequate—meal, the symptoms of hyperinsulinism may come on later in the day. In two cases we have seen these symptoms reappear as late as seven hours after the termination of treatment. Should these symptoms not be noticed and should the patient pass

¹¹ Wohlwill F. Ueber Hirnbefunde bei Insulinüberdosierung. *Klin. Wochenschr.* 7: 344 (Feb. 19) 1928. Stief A. and Tokay L. Beiträge zur Histopathologie der experimentellen Insulinvergiftung. *Ztschr. f. d. ges. Neurol. u. Psychiat.* 139: 424 1932.

during his sleep into progressively more severe degrees of hypoglycemia, the results may be extremely unfavorable

A second danger consists of collapse during a convulsive seizure. We have seen perhaps thirty or thirty-five seizures in all but have noted no very serious degrees of collapse beyond stoppage of respiration for periods of up to twenty seconds and some passing instability of the pulse. We consider that when convulsions occur treatment should be terminated immediately by means of intravenous sugar. In view of the observations of Cannon, McIver and Bliss¹² that in experimental animals larger doses of insulin evoke secondary discharge of epinephrine from the adrenal glands, we made a special search for possible epinephrine symptoms when seizures were threatening. At such times it was noted that the pulse became more frequent, that there was some diminution in sweating and that the pupils widened. This widening usually appeared immediately before the bursts of clonic shocks which precede, as a rule, the full-blown seizure. During this preconvulsive period the patient's general attitude is one of defense and, though he is usually very clouded, one gets a general impression of apprehension. Shaking the patient or moving him briskly, as in preparing him for an intravenous injection, intensifies the clonic shocks and, on one or two occasions, particularly active interference such as turning him quickly in bed has been followed by a seizure. At these times, too, there is often a marked degree of exophthalmos, this symptom also increasing on interference. On the other hand, we have failed to produce seizures by means of intravenous injection of epinephrine ($\frac{1}{200,000}$ mg.)

A third danger is that of aspiration pneumonia. During treatment there is usually increased salivation and the saliva is particularly sticky. Should the swallowing reflex be abolished in the latter stages of coma, there is a danger that the saliva may make its way down into the lungs. This can be overcome by having the patient lying in a semiprone position whereby the mouth is lower than the gullet.

A fourth possible danger is that of complications arising from the low body temperatures that are sometimes produced. Although we have recorded rectal temperatures as low as 92° F., we have not seen any ill effects from this cause.

There are a number of other contingencies that arise rather infrequently but should be mentioned. Occasionally one sees a hemiplegia or a more localized paresis which, however, passes away within the course of a few hours. It is our impression that the disappearance is hastened by giving large amounts of sugar. We have noted on two occasions that the final disappearance immediately followed the administration of dextrose. Cases have been reported in the literature in which the paresis has persisted for a few days (Ravid,¹³ Miller and Trescher¹⁴). Spasm of the glottis has been noticed by us on one or two occasions and pulmonary edema has been recorded, although we have not seen it in our series. These symptoms are rapidly abolished by means of intravenous dextrose.

A number of fatalities have been reported, particularly in the earlier literature.¹⁴ The mortality rate amounts to rather less than 1 per cent, which, bearing

in mind the severity of the disorder and the extremely poor outlook, is not a great number if it at all exceeds the normal expectancy for the time period involved. These fatalities on postmortem examination have shown in one case extensive brain changes, these being associated with an unrecognized return of the hypoglycemia, the patient having remained for about forty-six hours in a comatose condition before death. In another case very severe convulsions developed immediately following treatment. There were abnormal symptoms and the patient went downhill rapidly and died. Post mortem she was found to have an acute pancreatitis. A third patient collapsed a short while after termination of treatment and post mortem was found to have a coronary stenosis. As will be seen from the previous description of the technic, alterations have latterly been made which render it unlikely that fatalities from these causes, with the exception of the rather strange case of pancreatitis, would happen again.

RESULTS

Treatment has been completed in seventeen cases. These patients were treated from five to six times a week over periods that ranged from two to ten months. Of our group two have apparently recovered and five others have shown themselves capable of being at home for varying periods. Of the remaining cases five showed no improvement. No ill effects were noted even in cases in which treatment had been prolonged. When improvement does occur, the first changes consist in an increased interest in the environment. Later there are changes in the formal behavior. The patient who was formerly overactive and impulsive becomes increasingly quieter and more orderly. Underactive patients who have been refusing to eat or speak now become increasingly aware of their surroundings, start to talk more freely and begin to feed themselves. Patients who have been suffering from severe hallucinations and delusions find these gradually subsiding. They mean less and less to the patient and, in favorable cases, finally disappear. The capacity to concentrate comes back. In some cases there are interesting changes in the sex life of the individual. Patients who showed no apparent sex interest or only perverted sex interests begin to reveal more and more of a healthy heterosexual trend. This recovery is, however, quite slow, and it may take weeks or months before the best results can be obtained.

Relapses are frequent. Sometimes it is possible to ascribe the relapse to errors in the technic and sometimes they appear to be due to psychologic factors as, for instance, when some one endeavors to probe into the causes of the patient's earlier breakdown while his recovery is still in its early stages.

CONCLUSION

Our year's experience leads us to feel that the Sakel method is a promising therapeutic approach to the schizophrenic problem. In our hands the method has not yet yielded the high percentage of recoveries claimed from some European centers, but since that experience appears to be a considerable factor, we believe it is wise to suspend judgment as to the final efficacy of the method. In view of the well known tendency of the schizophrenia reaction to show considerable fluctuation both in its form and in its intensity, we feel that considerable care must be exercised to distinguish between the results of treatment and the endogenous fluctuations.

Apart from the value of insulin treatment in the immediate alleviation of early cases there are many

12 Cannon W. B., McIver M. A., and Bliss S. W. Sympathetic and Adrenal Mechanism for Mobilizing Sugar in Hypoglycemia. *Am. J. Physiol.* 69: 46 (June) 1924.

13 Ravid J. M. Transient Insulin Hypoglycemic Hemiplegias. *Am. J. M. Sc.* 175: 756 (June) 1928. Miller W. L. and Trescher J. H. Amnesia Epileptiform Convulsive Seizures and Hemiparesis as Manifestations of Insulin Shock. *Am. J. M. Sc.* 174: 453 (Oct.) 1927.

14 Dussik and Sakel. *Berglas and Susic*.

questions such as the permanence of the recoveries, the question of the most favorable kind of case and the light which this method may throw on etiology, which can be answered only after further investigation. We would emphasize most strongly that since experience plays such a large role in determining efficacy and forestalling danger, the method should not be attempted save in an adequately equipped mental hospital or under the immediate supervision of a well trained psychiatrist, who should also be capable of meeting the emergencies that may arise.

THE HYPOGLYCEMIC TREATMENT OF SCHIZOPHRENIA

A PRELIMINARY REPORT, WITH PARTICULAR REFERENCE TO THE QUALITATIVE STUDY OF REMISSIONS

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In presenting a preliminary report of our experiences with the hypoglycemic treatment of the schizophrenic reactions, we wish to discuss briefly the methods of study employed as well as the actual results obtained in our small series of completed cases. Most of the writers in this field have recognized the great difficulty involved in the evaluation of therapeutic results, arising chiefly from the heterogeneity of the schizophrenic psychoses, from the conflicting statistics regarding the "natural" prognosis of these conditions, taken as a group, and from the lack of reliable prognostic criteria in the individual cases. If these factors, even in a large series, militate considerably against the validity of any purely statistical comparison between treated and untreated cases, it is apparent that in a small series such as ours a statistical evaluation would be worthless. We do not intend to imply that the value of Sakel's method cannot be demonstrated by a quantitative approach, on the contrary, we feel that the publications of Dussik and Sakel¹ and of Mueller² present convincing evidence that insulin shock is a valuable therapeutic weapon in the treatment of schizophrenia, and our own results to date, as well as those of most other investigators, confirm this. In order to arrive at a qualitative judgment regarding the efficacy of and indications for the treatment, however, as well as to utilize it to the utmost in furthering our very inadequate knowledge of the schizophrenic reactions, we feel that more precise methods of study are essential, such methods must of necessity be based not only on the observations in cases treated with hypoglycemia, but also on more exact studies of the schizophrenic reactions in general, especially from the point of view of differentiation, clinical course and prognosis. One of us has been engaged for the past two years in a series of investigations designed to clarify some of these problems, since it was felt that without such clarification both etiologic and therapeutic research were greatly handicapped. This is not the place to report in any

detail the results of these studies, which will be presented elsewhere on their completion, here we would merely touch on a few of them as they relate to our work with insulin shock treatment.

In evaluating the therapeutic efficacy of any treatment of schizophrenia the following factors must be considered:

- 1 The percentage of remissions and social recoveries
- 2 The duration of the remissions
- 3 The quality of the remissions
- 4 The speed of recovery

Up to the present time we have completed treatment of seven patients, of whom six had been manifestly ill for periods varying from ten days to three months, whereas one patient had chronic paranoid schizophrenia of at least five years' duration. The diagnoses, duration of illness, and therapeutic results are shown in table 1.

In reviewing the results, one feature of interest is immediately apparent. In five of the seven cases, including the one chronic case, excellent results were obtained, in the two other cases, both of recent onset, no noteworthy changes occurred, and both of these cases were characterized by marked affective components. This appears particularly significant in view of the well known tendency of such cases to spontaneous remissions. If, as some writers have asserted, the effect of hypoglycemia were merely to further, by means of nonspecific shock, a natural tendency to recovery, one would expect these cases to react at least as well as the paranoid. Among seven additional patients whom we now have under treatment we again included two with pronounced affective components and again have observed a lack of therapeutic response. The condition in both of the cases in our present series remained unchanged for a period of several weeks after termi-

TABLE 1—Diagnoses, Duration and Therapeutic Results

Case	Age	Sex	Clinical Diagnosis	Duration of Illness Before Treatment	Clinical Result
1	26	♀	Catatonic schizophrenia (stupor) with underlying paranoid trends	Two and one half months	Remission
2	44	♀	Paranoid schizophrenia	Five years	Greatly improved (social recovery)
3	32	♀	Catatonic schizophrenia with marked depression	Two months	No change
4	23	♂	Paranoid schizophrenia	Two months	Remission
5	27	♂	Paranoid schizophrenia	Three months	Greatly improved (social recovery)
6	26	♀	Paranoid schizophrenia with manic features	One month	No change
7	32	♂	Paranoid schizophrenia	Ten days	Greatly improved (social recovery)

nation of the insulin treatment and then began to show some improvement, at the present time both patients are well on the way to good social recovery.

In distinguishing between complete remissions and social recoveries or marked improvements we have, for statistical purposes, followed the example of Sakel and Mueller. It is clear, however, that these designations are open to considerable variation in usage. Sakel³ has defined a full remission as one in which "the patient is not only symptom free but has full insight into his illness, normal emotional reactions, and can return to his former work." He

Read before the Section on Nervous and Mental Diseases at the Eighty Eighth Annual Session of the American Medical Association June 11, 1937.

¹ Dussik K. T. and Sakel Manfred. Ergebnisse der Hypoglykämieschockbehandlung der Schizophrenie. *Ztschr. f. d. ges. Neurol. u. Psychiat.* 155: 351 (May 22) 1936.

² Mueller M. Die Insulin chocktherapie der Schizophrenie. *Schweiz. med. Wchnschr.* 66: 929 (Sept. 26) 1936.

³ Sakel Manfred. Proceedings of the Section of Neurology and Psychiatry New York Academy of Medicine and the New York Neurological Society. *J. Nerv. & Ment. Dis.* 85: 561 (May) 1937.

speaks of a "good" remission as one "in which the patient is free of schizophrenic symptoms, and can resume his former work but has some slight degree of defect" The diagnosis of "some slight degree of defect" will in many cases depend on one's concept of schizophrenic symptomatology, as will the finding that the emotional reactions are normal We are in full accord with Bleuler's statement that "in every case the diagnosis of recovery is dependent upon the psychological skill of the examiner, and above all on the amount of time which the psychiatrist has at his disposal for the observation and examination of the patient One cannot directly diagnose complete recovery, one assumes it when careful searching reveals no signs of the illness He who has little time to examine his patients will find many recoveries which another would regard as improvements

A return to the condition existing before an acute episode is not at all rare, but this cannot be considered recovery if an insidious schizophrenia had already markedly changed the personality of the patient before the acute episode" We have designated as remissions those cases in which a careful clinical examination failed to reveal any evidence of schizophrenia and in which the opinion of relatives and friends concurred with that of the medical staff that the patient was apparently restored to com-

such but rather with those lasting over a considerable period of time Thus Mayer-Gross⁴ found that of 294 patients with schizophrenia admitted to the Heidelberg clinic in 1912 and 1913 eighty-nine, or 30 per cent, had maintained good social recoveries from sixteen to seven years later, and Otto-Martensen and E Meyer have published comparable results The statistics regarding remissions irrespective of duration vary from 20 to 35 per cent for all cases up to more than 50 per cent for acute cases, but none of them give sufficient information concerning the type of cases examined to be of any real statistical value The number of variables in the schizophrenic reactions is so great that for purposes of exact comparison it is advisable to subdivide both treated and untreated cases according to all the available prognostic criteria, such as age, body habitus, heredity, prepsychotic personality and clinical course, including type of onset" In studies over the past two years one of us has found that the presence and degree of formal thinking disorders is of particular importance in this respect A study taking all these factors into account is now in progress in our hospital and can eventually be used as a control for the insulin series In the meantime, however, we are in full accord with Mueller that incomplete statistical studies are of little value At all events, if Sakel's and Mueller's percent

TABLE 2—Course of Treatment

Case	Diagnosis	Result of Treatment	Time Elapsed Since Termination of Treatment	Length of Treatment (in Treatment Days)	Length of Phase I Days	Shock Dosage Units	Number of Shocks	Wet Shocks	Dry Shocks	Consultations	Myoclonic Twitchings, Days
1	Catatonic stupor	Very good	6 months	4 ⁰	10	70-85	29	29	0	0	0
2	Paranoid	Good	4½ months	68	10	85	54	54	0	1	(6) mild
3	Catatonic with depression	Poor	3½ months	41	12	110	6	2	4	0	(8) mild
4	Paranoid	Very good	3 months	60	13	185-200	43	43	0	1	(6) severe
5	Paranoid	Good	3 months	74	11	180	60	53	7	2	(3½) severe
6	Paranoid with manic features	Poor	1½ months	72	18	180-190	40	32	18	1	(3) mild
7	Paranoid	Good	2 months	70	13	200	33	33	0	2	(4) severe

plete health, although, as will be seen later, in every case finer methods of examination revealed some schizophrenic features By marked improvement with social recovery we mean that all gross schizophrenic symptoms (delusions, hallucinations, odd behavior, catatonic symptoms, dissociation of affect, and so on) have entirely disappeared and that the patient is able to return to work, but that some slight defects can be elicited by careful clinical examination, although to the eyes of the relatives the patients are entirely normal In both of these types of improvement, insight into the pathologic nature of the previous symptoms was present We have not yet encountered a third type of "recovery," seen so frequently in ordinary clinical practice, in which gross symptoms still persist in a much milder form and insight is lacking, but the patients nevertheless are capable of a return to work with fair social adjustment We prefer the term "improvement" to "social recovery" for these cases

Although these considerations are essential to the qualitative study of remissions, to which we shall return later, they are of only slight practical importance in the quantitative evaluation of the results of hypoglycemia since the available statistics on spontaneous remissions do not attempt to distinguish between various degrees of recovery but use only the criteria of social adjustment and the absence of obvious schizophrenic symptoms Unfortunately, however, there are no studies which are entirely satisfactory for comparison with a large insulin series Most of the statistics, in fact, do not deal with the number of spontaneous remissions as

ages of remissions are confirmed by other workers using the same technic, there will be no doubt as to the quantitative efficacy of the method

As regards the very important question of the duration of the remissions, no definite knowledge will of course be available for some years Nevertheless the fact that the follow-up studies of Dussik and Sakel show so few recurrences and that Mueller has seen none to date is in marked contrast to the ordinary clinical experience in an equal number of spontaneous remissions Not one of our cases has shown any tendency to relapse, on the contrary, most of them appear to be consolidating their gains Patient 5, for example, showed a mild degree of seclusiveness when first discharged from the hospital, but now, three months later, this trait has practically disappeared In this connection the remarks of Bowman⁶ and Wortis⁷ to the effect that it is unfair to judge Sakel's method on the basis of results reported by authors not using his strict technic are especially pertinent Wortis,⁸ in his excellent review of the history and present status of the treatment, cites the work at Wilna in which the patients were given much less intensive treatment and in which a large number of remissions were unsustained While there

4 Mayer-Gross, W. in Bumke, O. *Handbuch der Geisteskrankheiten* Berlin Julius Springer D. 534 1932
5 Mauz, Friedrich. *Die Prognostik der endogenen Psychoen* Leipzig Georg Thieme 1930
6 Bowman, K. M. *J. Nerv. & Ment. Dis.* 85: 570 (May) 1937
7 Wortis, Joseph. *J. Nerv. & Ment. Dis.* 85: 565 (May) 1937
8 Wortis, Joseph. *Sakel's Hypoglycemic Insulin Treatment of Psychoses: History and Present Status* *J. Nerv. & Ment. Dis.* 85: 541 (May) 1937

is of course no direct proof that a causal relationship between these two facts exists, it is certainly justifiable to assume it until an equal number of unsustained remissions are reported by investigators using Sakel's technic

One factor that has been given little mention to date is the speed of recovery. In any comparison between insulin and spontaneous remissions it must be remembered that the latter often occur only after many months of hospitalization. Not only is this earlier recovery worth much to the patient and his family, but its existence is a telling argument against the hypercritical and unjustified assumption that "most" insulin remissions are in reality spontaneous.

The most promising approach at the present time appears to us to lie in the qualitative study of remissions. We wish to know not only whether the insulin treatment increases the number of remissions but also whether these are in any way better than or different from spontaneous remissions. Sakel, Mueller and Wortis have already expressed the opinion that, taken as a whole, the insulin remissions impress them as being of better quality. Mueller in particular has called attention to the unusual degree of emotional rapport seen in the patients following recovery, and our own impression is that insight, rapport and general stability are on a higher level than is usually found in untreated but recovered patients. Such an opinion is, however, highly subjective. We are attempting to study objectively the quality of the remissions by two methods which we have utilized on a large scale in investigations of the schizophrenic psychoses: the Rorschach test and a special mental status⁹ designed to elicit certain types of schizophrenic thinking disorders. Without wishing in this place to enter into a discussion either of the highly complex and debatable problem of thinking disorders in schizophrenia or of the applicability and validity of the Rorschach test,¹⁰ we would state that the results to date indicate that the better insulin remissions show a degree of improvement which, in our experience, is not found in even the best spontaneous recoveries. We should add that the Rorschach test reveals some degree of schizophrenic defect in all "recovered" cases, both insulin and untreated, except in certain schizophrenic-like (schizoid) reactions in which the typical Rorschach manifestations are absent from the beginning.

A detailed discussion of the problems of technic and of laboratory investigations being undertaken must be reserved for a subsequent communication based on a larger number of treated cases. Technically we are attempting to follow Sakel's recommendations exactly, although it should be mentioned that in case 1, a catatonic stupor, deep shocks were used before we were acquainted with Sakel's modification of treatment for these cases. Table 2 summarizes a few pertinent facts concerning the course of the treatment in the seven cases.

As the table shows, neither myoclonic twitches nor convulsions interfere with a good therapeutic result. On the other hand, both of the unsatisfactory cases showed a comparatively large number of dry shocks as compared with wet shocks. The women as a group required a much smaller dosage of insulin than did the men. In the male and female groups respectively the excellence of the therapeutic effect appeared to some extent to be in inverse proportion to the size of the shock dosage, a factor which also found expression in the length of the induction period.

CONCLUSION

We feel that the results of the hypoglycemic treatment of schizophrenia to date are highly encouraging, although a long period of time will be necessary before a definite opinion can be given. Apart from its therapeutic value, the method offers an unusual opportunity for clinical and laboratory research.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs CAMERON AND HOSKINS AND
DRs RYMER, BENJAMIN AND EBAUGH

DR RICHARD H. YOUNG, Omaha. The papers on hypoglycemia today express the need for further accumulation of data with the original method and a special type of information obtainable by what has been termed a qualitative method, before reorientation takes place. It would seem too early to assume that a response to this treatment affords evidence of an organic etiology. About all that can be said is that the treatment brings about a change in certain cases because of an effect that is exerted chiefly at the physiologic level of integration. It is to be noted that the changes do not seem to reflect themselves in our studies of the blood mineral pattern taken under basal conditions (before insulin) at different times during the course of treatment. With regard to physiologic changes the same variations have been seen in insulin sensitivity, which may be of some prognostic importance. The insulin tolerance tests before treatment have given little information. Of interest is that four of forty-five patients complained of marked weakness after two or three weeks of treatment and asked for additional rest days. It was found that their blood pressures, which had formerly been normal and showed the usual elevation during hypoglycemia, were between 85 and 100 systolic. The serum potassiums were high normals and the chlorides usually in the lower range of normal. In two cases the nonprotein nitrogen was increased moderately. No studies of mineral balance or potassium tolerance tests were made. This reaction was associated also with a depressive affect in all four cases and a lack of improvement under treatment. This leads to the remarks concerning affect in the paper of Drs Rymer, Benjamin and Ebaugh. I should like to know what kind of affective reactions in their cases were associated with poor results. In our series it was particularly cases with depressive features that did poorly. Our experience is in line with other statements in these reports, and at the expense of being trite I shall conclude by (1) emphasizing the dangers, (2) urging a utilization of the opportunities for other types of treatment that the therapy presents in the form of lucid periods, and (3) commending the type of study that is being carried out.

DR LLOYD H. ZIEGLER, Albany, N. Y. The only intelligent approach to the problem is research aiming at prevention or cure. By fortuitous circumstance, as the results of research may be, Dr Sakel has brought a large ray of hope for multitudes of such patients. One should not cease hoping that, as in the case of smallpox, a prevention may be discovered that will obviate the necessity for cure. For a long time it has been known that simple infections, such as a furuncle, might cause a schizophrenic patient to abandon his seclusion and self-limited world of phantasy and seek relief from the infection. On the other hand infected colons and infected teeth have been removed because of their supposed effect on the patient. A successful merchant of my acquaintance, not schizophrenic, was changed from a sour, antagonistic, selfish person to a pleasant, friendly, tolerant one after a severe attack of pneumonia during which he was very delirious. One schizophrenic patient was markedly changed for the better by alcohol. The Russians have reported similar experiences. Carbon dioxide and sodium amytal have produced marvelous transitory effects. The induction of a prolonged period of sleep (several weeks) has had a certain amount of promise. Spontaneous changes apparently occur to produce a variable remission rate. It behooves us to inquire further into the factors that may be related to this so-called spontaneity. Drs Rymer, Benjamin and Ebaugh have gotten nicely started in this problem and have presented splendid criteria for the evaluation of therapy, together with the early results in a small

⁹ To be published later.

¹⁰ Benjamin J. D. and Ebaugh F. G. The Diagnostic Validity of the Rorschach Test. *Am. J. Psychiat.* to be published.

group Drs Cameron and Hoskins have made a clear statement of technique, have shown the dangers to be guarded against, and have reported the results so far attained with patients having more chronic disorders. In scanning the horizon of treatment one cannot but be impressed with the fact that there has been some order in the steps that have led to the adoption of insulin therapy. Insulin enables one to subject the patient to an internal hunger or deprivation, leading to unconsciousness and coma. If the usual patterns of behavior are not too habitual or rigid, the recovery from coma may be the point of departure for other behavior more in keeping with social demands. Or the brain cells themselves may have been conditioned to provide untapped resources dormant in the biogenetic anomaly known as schizophrenia. In either sense the patient is "born again," not so unlike the concepts held by our friends the spiritual advisers. In the one instance it is produced by biochemical means, in the other by a profound emotional shake up. One may make the deduction that insulin may be only one of several drugs or methods that may accomplish similar results. Some of these are beginning to appear now (metrazol).

DR FRANK N. ALLAN, Boston. The encouraging results of treatment of schizophrenia now under discussion will lead to public demand for insulin therapy, and physicians will be asked to treat all types of mental disorder under all sorts of conditions. I cannot pass judgment on the merits of the treatment through personal experience. I have been concerned with the use of insulin in conditions in which it is desired to avoid hypoglycemic reactions, so that I am unable to discuss the benefit of this treatment in which insulin shock is deliberately induced. My observation arouses the fear that whatever merit the treatment possesses may be lost unless it is judiciously employed. The fact that irreversible harmful effects on the nervous system are possible, as shown by Moersch and Kernohan, and the fact that during treatment the patient may come close to loss of life make skilled medical attention imperative. Evaluation of results demands expert psychiatric study before and after. Prolonged repetition of treatment appears necessary. It is not a matter for casual treatment in general hospitals, and certainly not in office or home. I would therefore strongly support the plea to internists and general practitioners to refrain from undertaking the treatment. Any patient suffering from a mental disorder serious enough to warrant consideration of insulin shock should be admitted to a hospital and have expert psychiatric care. Let us leave the matter entirely in the hands of psychiatrists who have had experience with the treatment or who can develop experience under conditions most favorable to the patient. Any other policy may seriously retard progress.

DR THEODORE R. ROBIE, East Orange, N. J. All I have to report is a rather general survey of seven cases treated so far. In two of the seven, treatment has been completed, with recovery. The first patient had acute catatonia of extreme type and has been at home now for six months, completely recovered and back at school. The second patient, with hebephrenia of three months' duration, now back at home, is quite normal. The other three patients with dementia praecox are still under treatment and it is unfair to report on them, but one in less than three weeks has shown a very remarkable recovery, and that is a case of some four years' duration, considered more or less hopeless before treatment was started. To make the seven cases complete, of the remaining two the first was a cross between an acute maniacal state and catatonic excitement. In less than ten days this man was brought into a normal mental state. He went home from the sanatorium in less than three weeks after being placed on treatment and is in excellent health. The other patient who had a manic-depressive psychosis with markedly depressive trends and who developed fugue states, has been treated has been home two months, and is clear of recurrent fugue states, which had been recurring previously about every two weeks. There are two points I would like to mention about bringing the patients out of coma. I have felt that it was better to use the intravenous dextrose method for patients who go into deep coma first because of the factor of psychic shock, which occurs when the nasal tube is used, I tried the nasal tube method and in each case got such a tremendous reaction that I did not feel it was desirable, second, the rapidity with which one can bring the patient out of coma and know just exactly where one stands.

DR JULIUS STEINFELD, Peoria, Ill. In the past ten months at the Michell Institute I have administered the insulin shock treatment, with the help of Dr. Burton, in twenty-five cases, including nineteen of schizophrenia, four of dipsomania and two of depression. The number of remissions compares with those pointed out by other authors. I shall discuss two observations. First, the value of epileptic seizures. I have seen a few patients in whom the improvement with insulin therapy reached a fixed level, and further improvement followed the use of metrazol. The method was similar to the methods used by other workers. The patient was given insulin early in the morning and later, when he showed signs of hypoglycemia, was given metrazol intravenously, which was followed immediately by a seizure. The seizures following the combined use of insulin and metrazol are greater and more prolonged than those produced by metrazol alone. This was noted especially in two patients who had been ill for more than four years. Second, the problem of gaining new insight into the schizophrenic process, particularly regarding the question of whether the disease leans more toward the organic or the functional side. An answer to this question would determine whether psychotherapy is indicated. In a paper presented recently before the Psycho-Analytic Society in Chicago I tried to show the following. During insulin therapy, regressive tendencies as expressed by mental and physical reactions are clearly visible. The lowest possible level of regression reached is exemplified by the assumption of childlike attitudes and such symptoms as sucking movements with the lips and tongue and infantile reflexes. The mental reactions of the regressed patient are well demonstrated in one instance by the following remarks: "I don't want to become any better. I should like to remain in this stage wherein I feel like a little child. Please don't give me more of those treatments, it disturbs my whole life." There is no doubt that from the standpoint of the deeply regressed patient the shock treatment disturbs the present view of life. In those cases I think one has to approach the patient in the way of psychotherapy and help him in finding a new attitude to a new world.

DR KARL THEO. DUSSIK, Vienna. Considering that more than 70 per cent of all patients in hospitals for mental diseases have dementia praecox, the insulin shock treatment as worked out by Dr. Manfred Sakel of Vienna may be regarded as the greatest advance in psychiatric therapy since the malaria treatment of dementia paralytica, discovered by Wagner-Jauregg, the former head of our clinic in Vienna. Prof. Otto Poetzl, the successor of Wagner-Jauregg, was courageous enough to try and to recommend the insulin shock treatment, although it seemed at first dangerous. After four years of using this treatment in a special department of our clinic the facts observed have convinced us that this method surpasses by far all the other methods thus far discovered to treat schizophrenic subjects. As I worked from the first day in using this method in our clinic I can confirm its real effect. The personality of the patient can often be changed so entirely during the hypoglycemic reactions that it seems as though the hypoglycemic treatment has created a new being. A recent examination of the first ten paranoid cases with a bad prognosis treated in my department of the clinic of Professor Poetzl for more than three years showed that eight patients of ten are today quite well and able to work in their respective professions as physician, engineer, bookkeeper and so on. It also demonstrated that the therapeutic effect in most cases has a good prognosis for the future. The treatment is generally not dangerous, provided the method is employed carefully, the doctor has had sufficient experience, and the patient does not have another organic illness, especially of the heart. It is, however, necessary that the treatment be begun as early as possible after the onset of the illness, because the percentage of successes, the quality of remission and the safety against relapse are much better the earlier the treatment is instituted. Sakel's method is the result of many years of seeking out of working. It is possible to combine with other, particularly endocrine and vegetative drugs such as epinephrine, adrenal cortex extract, pituitary and thyroid extracts or ergotamine and vitamins, but I think we should try first the method of hypoglycemia alone and be very cautious with the other drugs. We think that in addition to the therapeutic effects it will be possible to find answers to many ques-

tions regarding the psychotherapy of psychosis. We are hoping, too, for a further advance in experimental psychopathology. We think it will be possible to separate groups of schizophrenic patients and thus get more information about the etiology and the pictures and symptoms of psychosis. We believe that today psychiatrists of the whole world are cooperating more than ever before. A few days ago Dr Sakel spoke before the Psychiatric Congress in Bern, which was occupied almost entirely with this treatment. Dr Sakel was grateful for the sympathetic reception that this work received in the United States.

DR S. T. GORDY, Philadelphia. I should like to ask whether there has been any differentiation made between the types of schizophrenia—that is, the catatonic, heterophrenic, paranoid and simple types—and whether they offer any difference in their prognostic outlook under this method.

DR H. E. HINWICH, Albany, N. Y. I should like to call attention to another aspect of this problem, namely, why is it that insulin helps brain conditions? Why does it single out the brain or central nervous system from among all the other organs of the body? In an effort to answer such a question I drew venous blood from muscle and from brain when insulin was given in large doses to dogs. It was found that, no matter how low the blood sugar became, the blood coming back from the muscle was usually dark venous blood. On the contrary, the blood coming back from the brain became lighter in color and finally came back quite arterialized when the blood sugar was low. Apparently the brain, under hypoglycemia, ceases to maintain its normal oxygen consumption. This phenomenon may be explained if it is recalled that muscle may oxidize both fat and carbohydrate. When carbohydrate becomes less available, muscle will oxidize increasing amounts of fat. On the other hand the evidence to date seems to indicate that the brain can oxidize only one foodstuff, carbohydrate, and that when carbohydrate is removed, as the result of the low blood sugar, the brain is temporarily deprived of its energy requirements. Thus we have an answer to the question why insulin produces such a result because the brain chiefly requires carbohydrate, and insulin deprives the brain of this foodstuff. On the other hand, the question of just where this observation fits into the amelioration of the condition of schizophrenia is still to be solved.

DR WALTER FREEMAN, Washington, D. C. In my chairman's address six years ago, I drew on my imagination with regard to the psychoses and spoke about the chemistry of the psychoses under the title "psychochemistry." I suggested that some process might be found underlying the psychoses that would render their treatment as easy as that of some of the deficiency diseases, and I mentioned rickets as an example. I do not say that the treatment as here outlined is as successful as the treatment of rickets or of any other deficiency disease, or that the cured percentage is as high, but on the other hand I do not think that the ultimate in therapeutic possibilities has been reached. As Dr Steinfeld mentioned the possibilities of therapy may be improved by producing convulsions. I heartily second that statement, although it is based on a very small series of cases.

DR J. M. NIELSEN, Los Angeles. It seemed to me striking that the authors have said but little about the physical manifestations of dementia praecox yet they are always present. It is evident that dementia praecox affects not merely the brain but the entire body. Before the insulin treatment was discovered, fairly good results were obtained with sodium ricinoleate or with old fashioned castor oil. In the acute schizophrenic reaction one could get a 50 per cent recovery with those methods and a great deal of physical improvement was seen. With insulin exactly the same changes take place. The muddiness, dull skin clears up, the subcutaneous tissue clears and patients gain in weight. Before the insulin treatment the skin is thick, and it thins out and becomes relatively normal skin, the hair is matted but clears up and becomes of a fine texture, healthier looking throughout, the hands warm up and there is a general improvement in the entire physical being and not only in the mental state. It seems to me that there is a parallelism between the general physical state and the mental improvement.

DR R. G. HOSKINS, Boston. In considering therapeutic results, attention should be paid to the base line from which one is operating. Neither insulin nor anything else can be expected to restore the patient to better than his prepsychotic condition. Special interest attaches to insulin as a research tool. Attention has been focused on the patient who responds favorably to insulin therapy. Perhaps more important at the present time is the patient who does not respond. If we can learn from penetrating research why some patients do not respond we may learn the nature of schizophrenia itself. Abnormal oxygen metabolism seems to be a central feature in the psychosis. Hence the insulin treatment should be studied in relation to that factor. I was correspondingly glad to learn of Dr Hinwisch's illuminating new work on this subject. It is important to recognize that the curative effect of insulin may be exerted not in the brain itself but in the regulatory mechanisms whereby the oxygen metabolism is regulated. These may be endocrine, vitamin or what-not. Dr Freeman has suggested that organic iron may be an important factor. If schizophrenia originates in brain disorder and if disturbed oxygen metabolism is a central feature, we shall have to think of the oxidative enzymes. The oxidation of dextrose to carbon dioxide and water involves a series of chain reactions each of which is regulated by its own rather complex enzyme system. The pathology may consist in abnormality of these enzymes. This possibility may explain why the morphologic pathologist has sought in vain for a basis of the disorder. I am in disagreement with Dr Allan in his belief that the general practitioner has no duty at this time in the insulin treatment of schizophrenia. I feel that the man without special facilities may have the most important part to play. It seems to be the consensus of all who have studied the subject that the hope of insulin treatment is greatest in the most recent cases and that as time passes hope wanes. To the extent to which this is true, the responsibility comes back to the general practitioner to get the patients to the psychiatrist who is going to administer the treatment at the earliest possible date.

DR D. EWEN CAMERON, Worcester, Mass. I should like to comment on Dr Ziegler's statement that he feels that further research is necessary. That to my mind, is the paramount issue before us at the present time. The insulin treatment is something like an iceberg—what is before our eyes is very much less than what we do not grasp. Perhaps it is an evidence of good teamwork that what I had in mind to emphasize further in conclusion has already been taken up by my co-author, Dr Hoskins. I should like to drive the nail a little farther and say that I have had occasion, during the last year, to be present at a great many discussions on the insulin treatment, at which a great deal of emphasis was placed on the dramatic results, results which have occurred in patients who have been sick perhaps a long time, results that have occurred almost overnight. At the same time I think we should keep an eye on patients who do not recover. As the authors have pointed out, we may get some very interesting answers from their study. The other nail that I want to push a bit farther is the necessity of getting earlier cases. I feel that we are rapidly approaching the time when we may hope to launch a schizophrenia campaign comparable to the tuberculosis or cancer campaigns. It may not be primarily or exclusively on the basis of the insulin treatment, although it does seem at present that the insulin treatment might have first place. I feel that the early symptoms of schizophrenia are a legitimate source of study, to provide us with material to hand over to the lay worker, to the relatives and to the nonpsychiatric physicians so that they may earlier recognize the cases. Our research should likewise be directed toward finding what the laboratories can tell us regarding the changes that come in the very early stages. It may be that from the psychologic and biochemical laboratories we shall be able in the not too distant future to evolve a test comparable in efficacy to x-ray examination in the case of early tuberculosis. I dare not yet suggest anything having the specificity of the Wassermann test in syphilis.

DR CHARLES A. RIVIER, Denver. In response to Dr Young's question, the two cases with affective components comprised a catatonia with marked depression and a paranoid schizophrenia with manic features. We are certainly in agreement that every avenue of approach must be kept open in studying this method.

PROPHYLACTIC VACCINATION AGAINST
INTRACRANIAL COMPLICATIONSFOLLOWING PNEUMOCOCCUS TYPE III
MASTOIDITISJOSEPH L. GOLDMAN, M.D.
AND
CECELE HERSCHBERGER, B.S.
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It is well known that the presence of the type III pneumococcus in acute mastoiditis offers a serious prognosis because of the frequency with which subsequent intracranial complications develop. Meningitis is the complication usually encountered. As there is an interval of from one to several weeks, as a rule, between the initial infection and the time when complications occur, attempts to induce a state of active acquired immunity should receive consideration.

A number of workers in recent years have been able to protect animals against pneumococcal infections in a short period by vaccination. The following are some of the significant and pertinent reports on the subject.

Barach¹ in 1928 showed that mice can be actively immunized in three days by a single intraperitoneal injection of types I and II pneumococcus vaccine. In his experiments, type-specific antibodies appeared on the third day, increased progressively until the fifth day and remained approximately unchanged until the seventh day. On the third day the mice immunized with type I vaccine resisted 100,000 minimum lethal doses and mice immunized with type II vaccine resisted 10,000 minimum lethal doses. In 1931 Barach² demonstrated the appearance of specific protective substances in human serums four or five days after intravenous and intradermal injections of pneumococcus vaccine. In cases of lobar pneumonia it was possible to evoke type-specific antibodies by the injection of heterologous types of pneumococcus vaccine.

In 1927 Tillett³ was successful in actively immunizing rabbits with type III vaccine against infections with homologous organisms although specific antibodies were not demonstrable. He was able to protect completely 50 per cent of his rabbits and partially an additional 33 per cent by using in his experiments an organism made highly pathogenic by rapid animal passage. The method employed in conferring immunity in this instance consisted of administering injections every other week for six weeks.

Especially significant is the fact that Tillett showed that immunity can be obtained in animals to type III pneumococcus infections in the absence of specific antibodies in the blood serum. In other words, the degree of protection conferred cannot be determined by the presence or amount of agglutinins or precipitins in the serum. Similar observations with the type III pneumo-

coccus had been made previously by Hanes⁴ and by Singer and Adler.⁵

Cecil and Steffen⁶ in 1921 and 1923 conferred complete immunity on monkeys against experimentally produced types I and II pneumonia by three subcutaneous injections of homologous vaccines. With type III vaccine, complete immunity was obtained in 50 per cent of the animals. These workers also stated that specific protective bodies were not demonstrated in the monkeys protected by Pneumococcus types II and III vaccines.

In 1928 Goodner⁷ produced in rabbits by intradermal inoculation with the type I pneumococcus a local lesion which gave rise to a sequence of clinical manifestations that offered many analogies to pneumococcal lobar pneumonia. If sufficient antipneumococcus serum was administered twenty-four hours after the onset of the infection, prompt recovery was effected. Goodner further showed that rabbits could be protected from this intradermal infection by a single vaccination administered five days previously. Also, if the rabbits were vaccinated and then received an injection within the period necessary for the development of this immunity, the course of the consequent disease was shortened in proportion to the interval between vaccination and infection.

Working with the type I pneumococcus, Bull and McKee⁸ in 1927 conferred perfect protection on rabbits in ten days by intravenous inoculation with vaccine against infection by the nasal route. Walsh and Cannon⁹ were recently able to duplicate this protection in five days by intranasal vaccination. Their experiments indicate that the immunity is not strictly local but general. Bull and McKee and Walsh and Cannon also demonstrated immunity without evident protective substances in the blood serum.

In September 1931 this study¹⁰ was undertaken under the guidance of Dr. Gregory Schwartzman and with the cooperation of Dr. Isidore Friesner to determine the efficacy of active immunization against intracranial infections in cases of mastoiditis due to infection with the type III pneumococcus. Every patient with this disease admitted since September 1931 to the otologic service of the Mount Sinai Hospital has been given a course of vaccine therapy. The vaccination was begun as soon as the bacteriologic diagnosis was made. It was necessary of course to culture material taken from every infected mastoid bone at operation so that this form of therapy could be employed.

In 1932 Kolmer and Amano¹¹ published experimental evidence which tends to indicate further the beneficial effect of pneumococcus vaccination. They demonstrated that immunization with types I, II and III pneumococcus autogenous vaccines afford protection

4 Hanes, F. M. An Immunological Study of Pneumococcus Mucosus. *J. Exper. Med.* 19: 38 (Jan.) 1914.

5 Singer, E. and Adler, H. Die Immunität gegen Pneumococcus Typus III. *Ztschr. f. Immunitätsforsch. u. exper. Therap.* 41: 1 (Aug.) 1924.

6 Cecil, R. L. and Steffen, G. J. Studies on Pneumococcus Immunity. I and II. Active Immunization of Monkeys Against Pneumococcus Types I, II, III, and IV. Pneumonias with the Homologous Pneumococcus Vaccine. *J. Exper. Med.* 34: 149 (Aug.) 1923.

7 Goodner, Kenneth. Experimental Intradermal Pneumococcus Infection in Rabbits. *J. Exper. Med.* 48: 1 (July) 1928.

8 Bull, C. C. and McKee, C. M. Respiratory Immunity in Rabbits. II. Intranasal Infection and Immunization with Pneumococci. *Am. J. Hyg.* 6: 627 (Sept.) 1927. VII. Resistance to Intranasal Infection in the

Absence of Demonstrable Antibodies. *ibid.* 9: 490 (March) 1929.

9 Walsh, T. E. and Cannon, P. R. Studies on Acquired Immunity in Rabbits to Intranasal Infection with Type I Pneumococci. *J. Immunol.* 31: 331 (Oct.) 1936.

10 Goldman, J. L., Schwartzman, Gregory, and Herschberger, Cecile. Prophylactic Vaccination Against Intracranial Complications Following Pneumococcus Type III Mastoiditis. Preliminary Report. *Arch. Otolaryng.* 21: 154 (Feb.) 1935.

11 Kolmer, J. A. and Amano, K. W. The Specific Prophylaxis of Pneumococcus and of Streptococcus Meningitis. II. Vaccine Induced by

From the Laboratories and the Otological Service of the Mount Sinai Hospital.

Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1 Barach, A. L. Factors Involved in the Production of Immunity with Pneumococcus Vaccine. I. Active and Passive Immunity During the First Seven Days After Injection of Antigen. *J. Exper. Med.* 48: 83 (July) 1928.

2 Barach, A. L. Factors Involved in the Production of Immunity with Pneumococcus Vaccine. II. Induction of Active Immunity During the Course of Lobar Pneumonia. *J. Exper. Med.* 53: 367 (April) 1931.

3 Tillett, W. S. Studies on Immunity to Pneumococcus Type III. I. Antibody Response of Rabbits Immunized with Type III Pneumococcus. *J. Exper. Med.* 45: 713 (April) 1927. III. Increased Resistance to Type III Infection Induced in Rabbits by Immunization with R and S Forms of Pneumococcus. *ibid.* 46: 343 (Aug.) 1927.

against experimental meningitis in rabbits and on the basis of this work suggested prophylactic vaccination. Their results indicated that intracutaneous injections produce a higher degree of immunity than subcutaneous injections. They were successful in protecting 57 per cent of their rabbits by intracutaneous injections. Intravenous injections with type I pneumococci afforded 100 per cent protection. Oral vaccination with type III pneumococci also yielded 100 per cent protection.

It is appropriate to mention at this point that the old and possibly confusing nomenclature "*Streptococcus mucosus*" or "*Pneumococcus mucosus*" is not employed in our laboratories. All the gram-positive cocci in pairs or chains recovered from patients with acute mastoiditis are classified as either *Streptococcus hemolyticus*-beta, nonmucoid or mucoid variant, or *Pneumococcus* type III. The identification of the latter is based on solubility in bile and the results of agglutination and precipitation tests. If the serologic reactions with the original culture are inconclusive, the organisms are injected into the peritoneal cavity of a mouse and on the following day cultures are made from the heart's blood. This procedure is usually sufficient to restore the type-specific agglutinability and bile solubility of the pneumococcus.

TECHNIC

The vaccination technic originally consisted of six intradermal injections administered at the rate of two a week in the following increasing doses: 0.1, 0.2, 0.3, 0.5, 0.8 and 1 cc. For doses larger than 0.2 cc, several simultaneous injections were made. During the past two years four additional subcutaneous injections have been added. The first inoculation was given within forty-eight hours after the operation or, occasionally, before the operation. In the latter instances, the bacteriologic diagnosis was based on cultures of the discharge from the middle ear. To avoid loss of time, a stock vaccine was used for the initial injection. For the remaining injections an autogenous vaccine was employed. The autogenous vaccine was prepared by growing a pure culture of the type III pneumococcus, obtained from the mastoid pus, in 100 cc of 1 per cent dextrose broth for twenty-four hours. The organisms were centrifugated, washed once and then resuspended in 0.85 per cent sodium chloride solution to obtain a concentration of 600,000,000 organisms per cubic centimeter. The bacteria were then killed by heating at 60 C for one-half hour.

Sixty-one patients with acute mastoiditis due to infection with the type III pneumococcus were admitted to the hospital between September 1931 and April 1937. Of these fifty-six received a full course of vaccine. In the remaining five cases, no vaccine or only one or two injections were given because of deaths occurring shortly after operations. The five deaths were caused by facial erysipelas, accompanied by hemolytic streptococcus bacteremia in two instances, by meningitis which was present on admission to the hospital in two and by meningitis resulting from an operative injury in one.

Of the fifty-six patients who had received a full course of vaccine, four died. In one patient, a woman 66 years old, bronchopneumonia developed six weeks after her operation and three weeks after her discharge from the hospital. Her mastoidectomy wound had healed, and she was in good health before the pneumonic infection set in. In another patient, a man 65 years old, the clinical picture of petrositis was complicated by a squamous cell carcinoma of the nasopharynx, which by extension involved the basisphenoid, the apex of the petrous pyramid and the dura. This patient had had a mastoidectomy one year before at another institution. Operation at this admission uncovered an abscess of the petrous pyramid from which the type III pneumococcus was cultured. He finally succumbed to

meningitis, and gram-positive diplococci, which did not grow out on culture mediums, were found in the spinal fluid.

In the other two instances death was caused by meningitis which was directly secondary to the mastoid infection. One patient, a Negro 42 years old, was admitted with a history of aural pain for five weeks, aural discharge for four weeks and hemicranial headache for two weeks. At the operation considerable destruction of the mastoid was observed extending into the solid angle between the horizontal and superior semicircular canals and into the deeper cells between the facial nerve and the sigmoid sinus. The patient convalesced satisfactorily, and during convalescence he received the autogenous vaccine. Six weeks after operation however, he returned with recurrent mastoiditis. This time *Streptococcus hemolyticus* was isolated from the pus. After three months, during which time he complained of headaches, meningitis due to infection with the type III pneumococcus developed. Necropsy was not done. The other patient, a man 39 years old, entered the hospital with severe hemicranial pain for two weeks, profuse aural discharge, sagging of the external auditory canal wall and exquisite mastoid tenderness. The x-ray examination revealed destruction of bone and absorption in the petrous pyramid. At operation a markedly pneumatic and diseased mastoid bone was observed. A large pit, situated at the superior-posterior margin of the petrous pyramid in the region of the superior semicircular canal, was followed into the pyramid, and about one-half drachm (2 cc) of pus was evacuated. A drain was inserted. Although the patient improved after the operation, he was never entirely free from pain in the head. Three weeks after operation, meningitis developed. In this instance also necropsy was not done. We wish to point out that the last two patients presented indications of infection of the petrous pyramid.

The remaining fifty-two patients who received full courses of vaccine made uneventful recoveries. Dr. Friesner, the chief of the service, has expressed the belief that these vaccinated patients exhibited greater recuperative powers than patients he had previously observed with this type of infection. It must be remembered that such patients are usually middle-aged or elderly people. Of the fifty-two patients, fourteen left the hospital during the second week after operation, twenty-eight during the third week, nine during the fourth week and one (who had had petrositis) during the seventh week. None had significant postoperative complications. After leaving the hospital they were carefully observed by the resident staff or attending physicians for at least three months, and they remained entirely well. We believe that such patients who are free from symptoms for three months after mastoidectomy and whose mastoid wounds and middle ears are healed at the end of that time do not acquire any intracranial complications. Thus, in only two of the vaccinated patients could death be attributed to meningitis which directly complicated a mastoid infection—a mortality rate of 4 per cent.

Of 964 patients admitted to the Mount Sinai Hospital with acute mastoiditis during the ten years (from 1921 to 1931) prior to this work, forty had mastoiditis due to infection with the type III pneumococcus. Of these, thirteen died of meningitis—a mortality rate of 32.5 per cent. (The mortality rate for the previous five years, from 1927 to 1931, was 22 per cent.) In one patient meningitis became evident during the first week after operation, in two at the end of the first week, in

three during the second week, in four during the third week (one of whom had also had a brain abscess), in two during the fourth week and in one, three months after operation

Data on the experiments conducted with the object of demonstrating antibodies for *Pneumococcus* type III in the blood serum of our patients presumably resulting from vaccination are omitted from this report. It is sufficient to state that agglutinin, precipitin and complement fixation tests failed to show the formation of antibodies and that it was impossible to confer passive immunity on mice. But, as already mentioned, it has been conclusively shown that immunity to *Pneumococcus* type III infections can exist without the presence of these antibodies in the blood serum. It is probable also that an active cellular immunity may exist without demonstrable increase in humoral antibodies in the blood stream. The immunity may be due to increased cellular and general resistance rather than to the formation of new protective substances.

As the otologic service has been under the guidance of the same chief during the past sixteen years, clinical management and operative technic have not been factors in influencing the mortality rate of the cases observed during the past five and one-half years. We are well aware, nevertheless, that our cases constitute too small a group from which to draw definite conclusions. We also realize that the *pneumococcus* type III might have been a milder organism during the past five and one-half years and that the lower incidence of cerebral complications in our vaccinated patients might have been merely fortuitous. However, in view of the immunologic success obtained with *pneumococcus* vaccine in animals and human beings by reliable experimentation, we feel that further trial of this kind of simple prophylactic therapy is warranted.

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ABSTRACT OF DISCUSSION

DR. RUSSELL L. CECIL, New York. The two organisms feared about the oral cavity or the ears are *Streptococcus haemolyticus* and the type III *pneumococcus*. Both of these organisms produce a highly fatal pneumonia and a very fatal form of meningitis. Unfortunately, during the winter months both organisms are often present in the carrier state. From 11 to 12 per cent of healthy persons carry the type III *pneumococcus* in their throats and probably 40 or 50 per cent carry the hemolytic streptococcus during the late winter and spring months. With respect to prophylactic vaccination against the type III *pneumococcus*, this organism does not lend itself so readily to vaccination experiments as do some of the other types. That has been found true in manufacturing horse serum against the type III *pneumococcus*. It is hard to immunize a horse against the type III *pneumococcus*. It is hard to immunize man and the small laboratory animals presumably because this organism has a very thick capsule, but it can be done, as I have shown on monkeys and others have shown with rabbits and various animals. It can be done in several ways. A very high immunity was obtained in monkeys by intratracheal injections of vaccine. One can vaccinate by intradermal injections, as the speaker reported, quoting from Kolmer. However, this seems the least desirable method of vaccination, because, in experimental work, intradermal injections are apt to sensitize. Swift pointed out several years ago that intradermal injections sensitize and intravenous injections immunize. I would like to suggest to Drs. Goldman and Herschberger that they try giving these patients small intravenous injections because of the quick results obtained, and because one can give the type III *pneumococcus*, in fact any *pneumococcus*, intravenously without producing much reaction. Another suggestion I should like to offer is that they use autogenous vaccines, because I have found that there are biologic differences in these type III

strains. Some of them give much better protection than others. So I should advise either autogenous or at least a polyvalent type III vaccine. This is an intriguing piece of investigation, which ought to lead to wider studies. Putting myself in the place of the patient, if I had to have any operation around the throat or the nose or the ear I would be particularly interested in knowing just what pathogenic organisms I was carrying before I had the operation.

DR. W. E. GROVE, Milwaukee. The terms *Streptococcus mucosus* and *Pneumococcus mucosus* have been discarded in this paper for the much better designation of *pneumococcus* type III. It has been known for many years that this organism was a very treacherous invader of the mastoid, treacherous particularly because of the danger of a meningeal complication. This paper is not the authors' first on the subject. In February of 1935 they reported on the results of vaccination of twenty-seven patients with mastoiditis due to *pneumococcus* type III infection admitted to Mount Sinai Hospital, New York. The present paper deals with sixty-one cases, including the cases reported in the original paper. These are contrasted with forty cases admitted to the same hospital between 1921 and 1931, in which no protective vaccination had been employed. The reduction in the mortality from meningitis from 32.5 per cent in the earlier group to 4 per cent in the vaccinated group should command our attention. Goldman and his co-workers were unable to find any antibodies in human serum after vaccination. Julianelle, on the other hand, was able to demonstrate heterologous antibodies in the serums of all his rabbits. It occurs to me to ask whether Goldman and his associates looked only for the type-specific antibodies or whether they also looked for the heterologous species-specific antibodies. It also occurs to me to inquire whether it is the opinion of the authors that all the cases of meningitis encountered were the direct complications of the mastoiditis, or whether some of them might be regarded as hematogenous in origin.

DR. ISIDORE FRILSNER, New York. In infancy, *pneumococcus* type III disease in the bone is not any different, so far as its severity or the occurrence of complications is concerned, than any other infection. It is only when the temporal bone becomes pneumatized, and particularly in the infection of middle life and thereafter, that this particular type of infection increases in seriousness and proportionate to the lack of resistance, brought about either through age or through dyscrasia. There can be no question that in these particular cases presented by the authors adequate operation was performed. In the case in which meningitis occurred secondary to an operative trauma the pneumatic structure and the disease was followed behind the lateral, then along the posterior petrosal surface, with some of the dips of the dura that enter the bone in that situation were opened and there was a leakage of cerebrospinal fluid. All physicians who have had large operative experience will subscribe to the statement that in years the successive experiences with infection by *pneumococcus* type III have definitely demonstrated the inadequacy, the inefficiency at times, of surgical procedures alone. There is need for some other agent, particularly in view of the fact that with diminishing resistance the destruction in the temporal bone is out of all proportion to what occurs in that structure from other types of infection. I recall one petrous pyramid that was taken from a patient who had *pneumococcus* type III infection in the mastoid together with syphilis and diabetes. The destruction was out of all proportion to what one would expect. This man had a huge peribulbar abscess and a sinus thrombosis during the time that he was ambulant. He had a very extensive labyrinth, and despite the fact that his disease was progressing toward a fatal termination, the labyrinth showed reparative processes, with formation of new bone. The fact must be faced that in this type of infection in the temporal bone, and in the aged, in the diabetic, in those in whom general resistance has been weakened through either age or disease there is definite need for something more than surgical treatment. That is the chief note on this paper, its chief promise, because while the results are not definitely conclusive they point the way toward the possibility of aiding surgery by immunization.

DR. JOSEPH L. GOLDMAN, New York. I may have failed to make myself clear with regard to the type of vaccine used.

We use autogenous vaccines, except for the first dose, which is taken from a stock vaccine. This is done to save time. It is administered very often within twenty-four hours after operation, at which time the bacteriologic diagnosis is usually reported. It is true that vaccines administered intravenously are superior antigenically to vaccines administered by other routes. We have hesitated, however, to use this method because of possible constitutional reactions. I believe that most of the recent work on the subject points to the fact that intracutaneous vaccines have greater immunizing value than vaccines administered subcutaneously. With our patients we have never encountered any sensitization. I would like to repeat that with a pneumococcus type III made pathogenic by repeated animal passage it is possible to induce an active acquired immunity. With regard to Dr Grove's questions, I believe that all cases of meningitis secondary to acute mastoiditis are the result of direct extension and not metastatic in origin. We are of the opinion that patients having acute mastoiditis without involvement of the lateral sinus, or not complicated by a condition such as erysipelas or meningitis, do not have bacteremia. We did not examine the serum of our patients for heterologous or species-specific antibodies.

THE ERYTHROCYTE SEDIMENTATION RATE

THE ADEQUACY OF A SIMPLE TEST AND ITS PRACTICAL APPLICATION IN CLINICAL MEDICINE

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Although estimation of the rate of sedimentation of erythrocytes has proved to be a valuable laboratory aid in clinical medicine, it is not used as widely or as wisely as it should be used. There are two chief reasons for this. In the first place, it is erroneously regarded by many physicians as a difficult technical procedure. A survey of the voluminous literature on the subject will disclose that much of it is devoted to technicalities involved in performing and interpreting the test. The original methods used by Fahræus,¹ Westergren² and Linzenmeier³ were simple, but subsequent investigations, aiming to improve the test and eliminate error, have introduced numerous new techniques. Various types of anticoagulants, and tubes varying in length and bore, have been used. Much has been written concerning the importance of frequent readings or measurements, and various plans for charting readings have been devised. The advisability of correcting for anemia has been repeatedly emphasized, and various plans for making such corrections have been suggested. Other influencing factors, dealing with variations in temperature, deviation of the sedimentation tube from the perpendicular, and changes in the chemical constituents of the blood frequently have been noted. To the casual observer all this has made the test appear difficult and the results uncertain, and many physicians for these reasons have failed to use the test.

The second reason why the test is not more widely used is that the rate is increased in many diseases and is normal in many others. This, too, tends to make for confusion.

We have two main purposes, therefore, in the presentation of this paper: first of all, to demonstrate that a simple test such as can be performed easily by a general practitioner in his office is entirely adequate for practical purposes, and, second, to show that in those diseases in which the test has its chief value the results are reliable, fairly uniform and not confusing.

ADEQUACY OF A SIMPLE TEST

At the Mayo Clinic we have used a simple, modified Westergren test as follows. Five-tenths cc of a 3.8 per cent solution of sodium citrate in distilled water is placed in a tube, and to this is added 4.5 cc of blood that has been drawn from a vein with as little stasis as possible. After the tube has been inverted several times to insure thorough mixing, a Westergren pipet is filled to the 200 mm mark and placed in a rack in a strictly vertical position at room temperature. The height of the column of plasma is read at the end of one hour and reported in terms of millimeters of sedimentation in one hour. The importance of keeping the tube in a strictly vertical position must be repeatedly emphasized because slight deviation from this position results in a surprisingly increased sedimentation rate. Although this simple test has seemed to give clinical satisfaction, certain questions arose in our minds as time went on and as the medical literature dealing with the subject increased.

Should we make readings oftener than at the end of one hour to get the maximal information from the test? Should we use heparin as an anticoagulant instead of sodium citrate? Should a routine correction for anemia be made with each determination?

We have answered these questions to our own satisfaction after careful study. We have found that a single reading at the end of one hour is entirely satisfactory if the tube is tall enough. Packing of the erythrocytes, with corresponding slowing of the sedimentation rate, occurs, of course, much earlier in the shorter tubes, and if a short tube is used and a rapidly sedimenting blood is encountered, more frequent readings must be made in order to get a true idea of the rapidity of the rate of sedimentation. But in the Westergren tube, which is 200 mm tall, little packing occurs within the first hour, so that a single reading is entirely adequate. Charts 1, 2, 3 and 4 illustrate this point. In the work from which chart 1 was constructed sedimentation rates were calculated on the same blood but with different tubes. The same anticoagulant (0.5 cc of 3.8 per cent solution of sodium citrate to 4.5 cc of blood) was used in the Cutler and in the Westergren tubes, but heparin was used as an anticoagulant in the Wintrobe tube. The same conditions obtained in the work from which chart 2 was constructed. Rapidly sedimenting blood was used in each case to emphasize the phenomenon of packing. In the 50 mm tube, packing occurred in about twenty minutes in the case of subacute bacterial endocarditis (chart 1) and also in the case of infectious arthritis (chart 2), so that the reading at the end of an hour was practically the same as it was in twenty minutes, and unless more frequent readings were made the true rapidity of the process of sedimentation would not be determined. Packing of the erythrocytes does not occur in the 100 mm tubes as soon as it occurs in the 50 mm tubes but in the case of subacute bacterial endocarditis (chart 1) and even

Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

From the Division of Medicine the Mayo Clinic (Dr. Bannick). Dr. Gregg and Dr. Guernsey are Fellow in Surgery the Mayo Foundation. Read before the Section on Pathology and Physiology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

1. Fahræus, Robin. The Suspension Stability of the Blood. *Acta med Scandinav* 55: 123 (May) 1921.

2. Westergren, Alf. Studies of the Suspension Stability of the Blood in Pulmonary Tuberculosis. *Acta med Scandinav* 54: 247-282, 1921.

3. Linzenmeier, G. Die Blutkörperchengeschwindigkeit als differentialdiagnostisches Hilfsmittel bei Adnexerkrankungen. *Zentralbl f Chir* 46: 535-542 (April 8) 1922.

in the case of infectious arthritis (chart 2), in which a low hematocrit volume naturally delayed the time of packing, it did occur before the end of the hour. In the 200 mm tubes very little packing occurred in the first hour in either case, and therefore a single reading at the end of one hour would be adequate.

Sedimentation rates were calculated on a group of hospital patients by means of the simple, modified Westergren technic which we have described and also the method described by Rourke and Ernstene⁵ with heparin as an anticoagulant. We used the Wintrobe tube which is 100 mm in length and a higher concentration of heparin (12 mg of heparin per cubic centimeter of blood) than that used by Rourke and Ernstene, but otherwise the technic followed was the same as that used by the investigators named. The readings were made every five minutes for one hour and plotted. The straight line portion of the graph obtained was measured and recorded as millimeters of sedimentation per minute, thus taking into consideration the period of aggregation of erythrocytes as well as the period of packing. Corrections were not made for anemia. In chart 4 the modified Westergren and Rourke-Ernstene methods are plotted against each other. It is readily seen that striking correlation exists. In only a few instances is there discrepancy. Furthermore, careful analysis of the discrepancies shows that in the six cases in which the sedimentation rate was increased as determined by the modified Westergren method and was not increased as determined by the Rourke-Ernstene method, pathologic change was sufficient to cause an increased sedimentation rate and the error would seem to be on the part of the latter method. Likewise, in three of the cases in which the rate was increased as determined by the Rourke-Ernstene and not by the

question that was raised, namely, that with regard to the anticoagulant Sodium citrate in the concentration in which we have used it has seemed to be a satisfactory anticoagulant, thereby agreeing with the observation of Walton⁶. Some physicians may prefer a dry anticoagulant, especially for use in the office, because of some inconvenience in keeping a fresh solution of 18 per cent of sodium citrate. Dry potassium oxalate

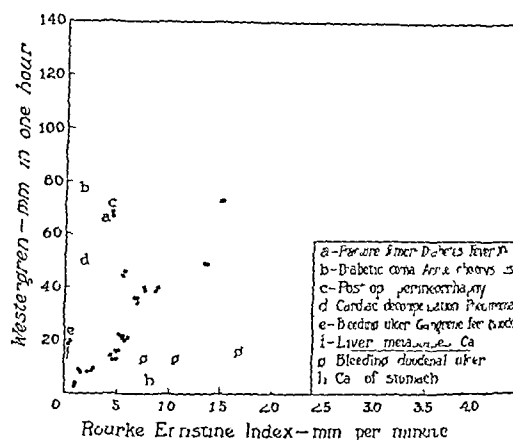
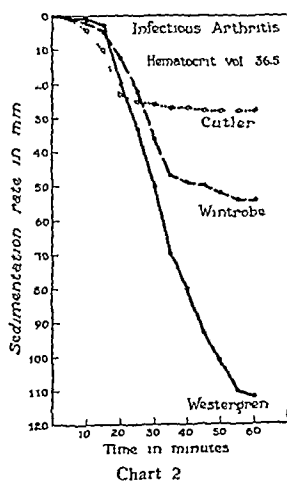
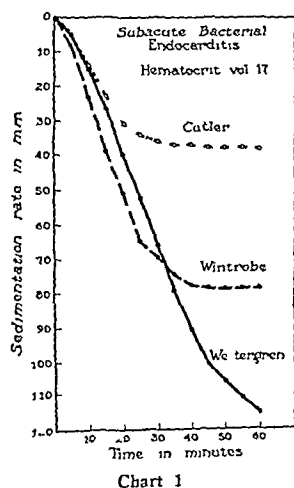


Chart 4—Each black dot represents a determination of sedimentation rate on the same blood by means of the modified Westergren method in which the result is reported in terms of millimeters of sedimentation in one hour and by means also of the Rourke-Ernstene index in which the result is reported in terms of millimeters of sedimentation per minute.

(2 mg per cubic centimeter of blood) has seemed to be satisfactory, and it has an additional advantage in that the same blood can be used for the sedimentation test as for blood chemical determinations. Wintrobe and Landsberg⁸ expressed the belief that the mixture of ammonium oxalate and potassium oxalate is a better anticoagulant than potassium oxalate alone. They recommended 6 mg of ammonium oxalate and 4 mg of potassium oxalate to 5 cc of blood. At any rate, the problem of a satisfactory anticoagulant is simple enough and the physician can decide which one he prefers for his particular type of practice and can familiarize himself with it. We have been satisfied with the sodium citrate solution which we have described.

The question of the effect of anemia on the sedimentation rate has been much discussed, but the effect of various types and degrees of true anemia on the rate never has been satisfactorily studied. Little has been added since Fahraeus¹ demonstrated that by diluting cells with plasma the rate was accelerated. Gram,⁹ by experiments in concentration and dilution, worked out a chart for hemoglobin values from 70 per cent to 120 per cent. Walton⁶ calculated a set of corrections for anemia by dilution experiments with the erythrocyte count as standard. Rourke and Plass¹⁰ and later Rourke and Ernstene,⁵ using hematocrit readings with heparin for standards of comparison, worked out a correction chart based on experiments in which they concentrated and diluted blood obtained from both normal individuals and those suffering from disease.



Charts 1 and 2—Determinations of the sedimentation rate with three tubes of different lengths. Cutler tube 50 mm high. Wintrobe tube 100 mm high. Westergren tube 200 mm high. Chart 1 blood of a patient who had subacute bacterial endocarditis. Chart 2 blood of a patient who had infectious arthritis.

modified Westergren method the patients had bleeding duodenal ulcers, and the increased rate recorded by the uncorrected Rourke-Ernstene technic was probably due to the anemia, the corrected rate in each case was normal. Therefore, only in case H (chart 4) did the simple test fail to give satisfactory information. This would seem to offer further proof that a single reading at the end of one hour is entirely adequate when the Westergren tube is used, and it also answers the second

5 Rourke M Dorothy and Ernstene A C. A Method for Correcting the Erythrocyte Sedimentation Rate for Variations in the Cell Volume Percentage of Blood. *J Clin Investigation* 8: 545-559 (June) 1930.

6 Walton A C R. The Corrected Erythrocyte Sedimentation Test. *J Lab & Clin Med* 18: 711-723 (April) 1933.
7 Haskins H D, Trotman F E, O'good E E and Mathieu Albert A. Rapid Method for Determination of the Sedimentation Rate of the Red Cells with Results in Health and Disease. *J Lab & Clin Med* 16: 487-494 (Feb) 1931.
8 Wintrobe M M and Landsberg J W. A Standardized Technic for the Blood Sedimentation Test. *Am J Sc* 180: 102-115 (Jan) 1935.
9 Gram H C. The Sedimentation of the Blood Corpuscles in Various Internal Diseases and the Result of Correction of This Value for the Variations of the Hemoglobin Percentage. *Acta med Scandinavica* 70: 242-275 1929.
10 Rourke M Dorothy and Plass E D. An Investigation of Various Factors Which Affect the Sedimentation Rate of the Red Blood Cells. *J Clin Investigation* 7: 363-386 (Aug) 1929.

Wintrobe and Landsberg⁸ made similar experiments, using only normal blood with dry potassium oxalate as the anticoagulant

There is no doubt that anemia has an accelerating effect on the sedimentation rate, but in our clinical experience we have found that this effect may vary with the type of anemia and the type of anticoagulant as well as with the degree of anemia. Our impression is that the sedimentation rate is in general not quite as fast in anemia as the dilution experiments would indicate and that the various corrections for anemia tend toward overcorrection. In forming this impression we have studied the corrected and uncorrected rates (Rouike-Ernstene method) of a considerable number of anemic patients who had diseases which are practically always characterized by increased sedimentation rates, in these cases the uncorrected rates were high and the nonfilament leukocyte counts were increased, but not infrequently the corrected rate gave normal readings. Further, we have made determinations of sedimentation rates in a group of cases in which anemia, owing to acute loss of blood, was present. Chart 4 represents such studies in ten cases of bleeding duodenal ulcer. Sedimentation rates were determined by two methods at each calculation for one a 200 mm Westergren tube was used and sodium citrate was employed as the anticoagulant and for the other a 100 mm Wintrobe tube was used and heparin was employed as the anticoagulant, as previously described. Study of chart 4 will show that in the first place erythrocytes of heparinized blood usually undergo sedimentation more rapidly in these cases of acute bleeding than they do in citrated blood and, second, that in citrated blood the sedimentation rate was not increased as much, in most instances, as the degree of anemia (determined by the hematocrit volume) would have led one to expect, according to the various methods of correction that have been devised.

One of us¹¹ has reported the results of sedimentation tests on rabbits made anemic by bleeding and allowed to recover. In this work also the sedimentation rate in the blood of anemic rabbits was not as fast as dilution experiments would have indicated. Therefore, although we appreciate that correction for anemia must be taken into consideration, we believe that too much emphasis has been placed on the necessity of making such routine corrections in every case. Many physicians have been led to believe that without calculated correction for anemia the test is misleading and therefore many do not use the test because such corrections make it considerably more complicated than otherwise.

From a practical standpoint, routine correction in each case is unnecessary and, as we have indicated, may even give false corrections. In a large percentage of the cases in which the sedimentation rate has its chief clinical value it will not be necessary to make any actually calculated correction for anemia because the uncorrected rate usually is either normal or significantly abnormal, without any calculated correction. If the sedimentation rate is only slightly increased and the patient is significantly anemic, the assumption can be made with reasonable accuracy that the slight increase in the sedimentation rate is accounted for by the anemia—at least that is what the correction charts would show.

It is only in cases in which anemia is slight and there is a slight increase in the sedimentation rate or in cases in which anemia is moderate or marked and there is a

moderate increase in the sedimentation rate that interpretation of the reading of the sedimentation rate becomes difficult. This situation arises rather infrequently in cases encountered in the practice of general medicine in which the sedimentation rate has its chief practical application. When it does arise, the physician either can discount the value of determination of the sedimentation rate in that particular case or he can make correction for the anemia by whatever method he chooses, keeping in mind the possibility of the tendency toward overcorrection.

PRACTICAL VALUE OF THE TEST IN CLINICAL MEDICINE

So much for the adequacy of the simple determination of sedimentation rate which we have described. Now as to its practical value in clinical medicine. Much has been written concerning the sedimentation rate in a great many diseases. Numerous articles have designated those diseases in which the sedimentation rate is likely to be increased, those in which it is likely to be normal and those in which the results are variable. Such a grouping is very difficult, can be only relatively accurate and may make the test appear so nonspecific

and variable as to have little clinical value. We are not much interested in the sedimentation rate in diseases such as thyrotoxicosis, hypertension, lead poisoning, various types of skin disease, nephritis, congestive heart failure, jaundice and many others like this, in which the sedimentation rate is extremely variable owing to many complicating factors and in which it adds little to the clinical picture or may only cause confusion.

We are interested in what the sedimentation rate is in those diseases in which it is of real diagnostic and prognostic value and in which the results fortunately are not confusing. We believe that the practical value of the determination of sedimentation rate in general medicine is threefold: (1) to indicate the presence of disease, (2) to indicate the activity and progress of diseases such as tuberculosis, pelvic inflammatory disease, acute cholecystitis, rheumatic fever, infectious arthritis, pneumonia and other thoracic infections and suppurations, Hodgkin's disease, acute febrile illnesses and acute coronary thrombosis, and (3) to aid in differential diagnosis.

To indicate the presence of disease, the test is entirely nonspecific and must be properly interpreted lest it give false sense of security. As has been stated repeatedly and as every one who has had much experience with the test knows, a normal sedimentation rate does not mean that the patient has no disease. In many diseases the sedimentation rate is normal. A normal sedimentation rate in a case in which the evidence is of a functional disorder gives the physician reassurance, as it does also in a case of questionably active tuberculosis, of systemic infection or of back pain when the patient

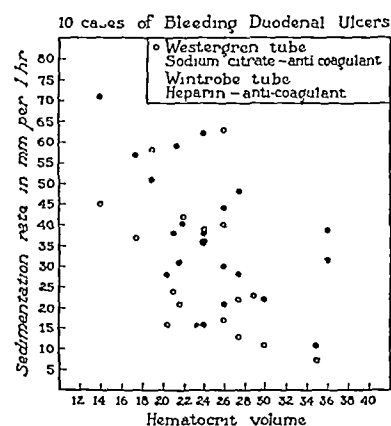


Chart 5.—Sedimentation rate in ten cases of bleeding duodenal ulcer variation in sedimentation rate according to hematocrit volume

11 Clegg, R. O. The Sedimentation Rate in Experimental Anemia (Rabbit). *J. Lab. & Clin. Med.* 22: 786-795 (May) 1937.

is elderly and might have metastatic cancer. In all such instances and in other similar instances, however, the physician should not place too much reliance on the sedimentation rate and should regard it simply as another link in the chain of evidence against organic disease, particularly against systemic organic disease, in that particular case.

On the other hand, when the sedimentation rate is increased the physician can be certain that some abnormality exists. Pregnancy is the only physiologic process that is accompanied by significantly rapid sedimentation of the erythrocytes. Occasionally the physician will be unable to find the cause of the increased

TABLE 1—Sedimentation Rate

Diagnosis	Cases	Sedimentation Rate Mm in 1 Hour			Mean
		1-15	16-24	25+	
Fibrositis	100	73	16	11	11.6
Atrophic arthritis	100	3	6	91	71.6
Hypertrophic arthritis	25	25			9.2
Skeletal metastasis	58	3	3	52	74.7

sedimentation rate even after careful study. In such rare instances he must advise the patient according to his clinical judgment and should not become unnecessarily confused, yet he should assume that the increased sedimentation rate is probably a correct indication of some abnormality and he should try to keep in touch with the patient until the sedimentation rate has reached normal or until the reason for the increased rate has become apparent.

The sedimentation test is of practical value also as an aid in determining the activity and progress of certain diseases and thus is a great help in planning proper treatment. We have mentioned those diseases in which we have found the test to be of particular value in this regard. Its use in tuberculosis and pelvic inflammatory disease needs little comment because so much already has been written on those subjects and because acceptance of its value has been so widespread. Cutler¹² stated that as an aid in investigating activity the sedimentation test is more reliable than the temperature curve, pulse rate or gain in weight, the three major guides in the treatment of tuberculosis. At present the sedimentation test is a routine procedure in most institutions specializing in the care of tuberculous patients.

The sedimentation test has played an important part in the present day conservatism in the management of pelvic inflammatory disease. In the past the residual activity in such cases was not appreciated, and therefore the rigid management was not maintained long enough. This resulted in numerous recurrences and exacerbations of the process until too often surgical operation was required. Operation also was performed frequently when the process was too active, and radical measures often were necessary, with increased operative risk and poor results. At present the sedimentation test is widely used to demonstrate activity in cases in which the process otherwise would seem to be quiescent. Thus, by continuation of rigid management and observation until the sedimentation rate is practically normal, and by the addition of newer methods of applying heat locally and of inducing fever artificially, the vast majority of patients who have acute pelvic inflammatory disease, particularly of the gonorrheal type, are so much improved that surgical operation is not necessary.

In those cases in which medical management fails and surgical operation is necessary, the sedimentation test again provides a measure of the activity of the process, and the surgeon usually postpones operation until the sedimentation rate has returned nearly to normal, at which time a more conservative operation can be performed with less risk and with prospect of better end results.

Likewise in acute cholecystitis the sedimentation test provides a reliable guide to the activity of the process. The fever and leukocytosis may have subsided, and the abdominal tenderness and rigidity may have markedly diminished, but if the sedimentation rate remains elevated the surgeon can anticipate considerable activity. Furthermore, if the sedimentation rate, instead of gradually falling begins to rise, the surgeon can suspect some complicating factors which may require prompt surgical intervention. In rheumatic fever also the test provides the most accurate guide as to activity. The sedimentation rate usually remains increased for a considerable period after the elevated temperature has subsided and after involvement of the joints has disappeared. It is generally agreed that the patient should remain quiet until the sedimentation rate has become practically normal. In this way complications and exacerbations are frequently avoided. A rising sedimentation rate in the course of the illness should put the physician on the lookout for some complication such as pericarditis.

The sedimentation rate is increased in gout in the stage of active involvement of the joints but returns to normal between attacks. In infectious arthritis the sedimentation test again acts as a sensitive indicator of the activity of the process and is a valuable laboratory aid to the physician in managing such a case. The sedimentation rate is significantly increased in well developed pneumonia and subsides slowly and gradually as resolution of the pneumonic process continues. This helps the physician to determine how soon the patient

TABLE 2—Four Early Cases of Acute Pelvic Inflammatory Disease (Gonorrheal)

Case	Duration of Pain Days	Sedimentation Rate Mm in 1 Hour	Leukocytes per Cu. Mm	Polymorpho nuclear Leukocytes per Cent	Temperature Degrees F
1	1	7	24,000		99.8
	2	56	25,000	91	101.1
	3	83	13,000		98.4
2	1½	22	15,200	90	100.5
	2	41	18,000	91.5	103.2
	9	76	11,000		100.5
3	2	16	11,900		99.6
	3	38	9,700		100.5
4	5	17	22,500	84.5	100.0
	6	47	13,600	79.5	99.5
	7	58			98.4

should resume activity. If, instead of gradually falling, the sedimentation rate begins to rise, some complication such as beginning empyema should be suspected. In other forms of thoracic infection and suppuration the test aids in determining whether the process is subsiding, extending or remaining practically unchanged.

In Hodgkin's disease and lymphoblastoma the sedimentation rate is usually significantly increased. It therefore is of some aid in differential diagnosis of these diseases and when patients return for reexamination an increased sedimentation rate suggests that the process is still active and thus may help in the decision as to whether further roentgenologic treatment is advisable.

In acute febrile illnesses the test aids in detecting the early onset of complications. In many acute fevers

¹² Cutler, Jacob. The Graphic Method for the Blood Sedimentation Test. Presentation of a 1 cc. Technique and Other Important Modifications and Suggestions. *Am. Rev. Tuberc.* 19: 544-558 (May) 1929.

the sedimentation rate is not increased in the early stages but tends gradually to rise and then slowly to fall. Any sudden or striking increase in the sedimentation rate under such circumstances suggests the onset of some complication.

The test is of some value also in following the progress of a patient who has had acute coronary thrombosis.

In the third place, the sedimentation test may provide valuable aid in differential diagnosis. When used in this way, much caution must be exercised because the test is fundamentally nonspecific and its real function should be to indicate the presence of disease and to allow the course of disease to be followed. However, as a result of a large clinical experience with this test, in many diseases, we have found it to be of great practical value in the differential diagnosis of several groups of cases, as follows:

It may aid in distinguishing benign from malignant conditions, but the test must not be relied on too much in this regard. We have seen patients who had carcinomas of various types and sizes, and who even had regional and distant metastasis, whose sedimentation rate was perfectly normal. Usually, however, the sedimentation rate is increased in the presence of malignant conditions, particularly when the lesion is of the ulcerating type.

In skeletal malignancy, particularly when it is metastatic, the sedimentation rate is almost always increased and usually is markedly increased. In a group of fifty-eight cases in which there was skeletal metastasis, which we have been studying and which will be reported soon,¹³ in fifty-two sedimentation rates were more than 25 mm in one hour and in only three were sedimentation rates less than 15 mm in one hour. In most instances the sedimentation rates were high, so that the mean in the fifty-eight cases was 74.7 mm in one hour (table 1). The frequency with which a markedly increased sedimentation rate occurs when skeletal metastasis is present is often a point of great value in the diagnosis of such a condition. A case of suspected metastatic skeletal malignancy, in which there is a significantly increased sedimentation rate that cannot be accounted for on any other basis, must be considered to be an instance of skeletal metastasis until it is proved otherwise, even though roentgenograms fail to reveal metastasis. In several such cases that we have seen, subsequent roentgenograms have revealed the skeletal metastasis. If, in addition to the increased sedimentation rate, myeloid immaturity is discovered in examination of the blood smear, and the total leukocyte count is normal or nearly normal, the diagnosis of skeletal malignancy can be made with a high degree of accuracy.

The sedimentation test is of great value also as an aid in the differential diagnosis of various forms of arthritis. As is shown in table 1, in ninety-one of 100 cases of atrophic arthritis (infectious arthritis) reported by Slocumb,¹⁴ sedimentation rates were more than 25 mm and the mean rate was 71.6 mm in one hour. In only three cases was the sedimentation rate less than 15 mm in one hour, and these were all cases in which there was very little activity. In comparison with this, Slocumb noted that in 100 cases of fibrositis that were carefully selected from the standpoint of diagnosis (table 1) in only eleven were sedimentation rates more than 25 mm in one hour. The mean was 11.6 mm in one hour. In seventy-three of the 100 cases

the sedimentation rate was less than 15 mm in one hour. In simple hypertrophic arthritis the sedimentation rate is rarely increased. It generally has been assumed that hypertrophic arthritis causes a slight elevation of the sedimentation rate in about 2 per cent of the cases, but in the twenty-five cases, records of which we took at random from our files, the sedimentation rate was normal in each instance (table 1).

Finally, determination of the sedimentation rate has proved to be valuable in the differential diagnosis of acute appendicitis from other acute abdominal diseases which simulate it. Lesser and Goldberger¹⁵ were the first to show that the sedimentation rate was normal in the presence of acute appendicitis without rupture, even though the appendix was gangrenous or markedly suppurative. Prior to the publication of their article it had been stated repeatedly that the sedimentation rate was normal in the presence of simple catarrhal appendicitis, but the assumption apparently had been that in association with gangrenous or suppurative appendicitis the rate was likely to be somewhat increased. Repeat-

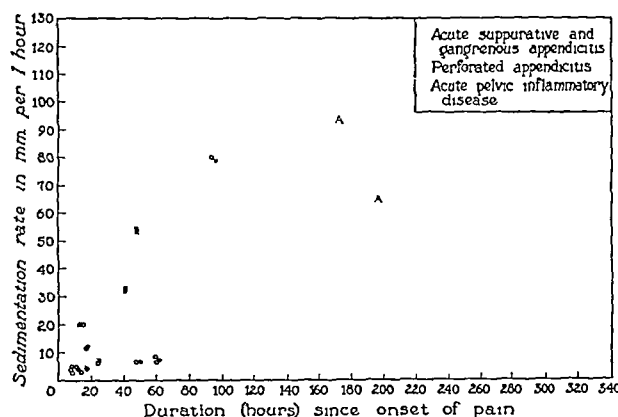


Chart 6—Sedimentation rate in acute appendicitis and acute pelvic inflammatory disease

edly we have been able to confirm Lesser and Goldberger's observations. In the past two years we have made determinations of the sedimentation rate in nearly all cases of acute appendicitis that we have encountered and we have not noted a single case in which the sedimentation rate was definitely increased as a result of the appendicitis unless the appendix had ruptured. In chart 6 we have recorded the sedimentation rates in a selected group of these cases. The patients were all seen by the senior author and were selected because they exemplified extremely marked acute appendicitis. In each instance the appendix was either markedly gangrenous (grade 4) or markedly suppurative (grade 4) or perforated. The diagnosis was confirmed in each case at operation or at necropsy.

If 20 mm per hour is the very upper limit of normal for the sedimentation rate, according to the method we have used and described, chart 6 will show that the sedimentation rate was normal in all except two cases of appendicitis without rupture. In one of these the sedimentation rate was 80 mm in one hour but the patient had acute gonorrheal salpingitis as well as acute appendicitis, and the increased sedimentation rate undoubtedly was due to the former. In the other case the sedimentation rate was 28 mm in one hour but the patient's erythrocyte count was 3,240,000 per cubic millimeter of blood and we were certain that the anemia

¹³ Kaump, D. H., Bannick, E. G. and Heck, F. J. Unpublished data.

¹⁴ Slocumb, C. H. Differential Diagnosis of Periarthritic Fibrositis and Arthritis. *J. Lab. & Clin. Med.* 22: 56-61 (Oct.) 1936.

¹⁵ Lesser, Albert and Goldberger, H. A. The Blood Sedimentation Test and Its Value in the Differential Diagnosis of Acute Appendicitis. *Surg., Gynec. & Obst.* 60: 157-166 (Feb.) 1935.

could account for the slightly increased rate without even making any actual correction, a point which we have made previously

Our observations, therefore, have been that acute appendicitis without rupture does not cause an increased sedimentation rate. However, this does not mean that because the sedimentation rate is increased the patient cannot have appendicitis. It simply means that such an increased sedimentation rate is due to something other than the appendicitis. The physician, therefore, must continue to use his clinical judgment. He must not rely entirely on any laboratory test and he must give the patient the benefit of surgical operation in a questionable case such as the one to which reference has been made in which the patient had both acute appendicitis and acute salpingitis. Fortunately, such an occurrence as this is rare, as chart 6 will show. Furthermore, appendicitis with rupture does not immediately result in an increased sedimentation rate. In chart 6 are represented four such cases in which sedimentation rates were perfectly normal, however, as peritonitis develops the sedimentation rate soon rises, although it usually does not go as high in the cases in which there is general peritonitis as it does in those in which abscess develops. Lesser and Goldberger further stated that the consistently normal sedimentation rate in appendicitis was of particular value in the diagnosis of acute appendicitis, because in all other conditions which produced the clinical picture of acute surgical conditions of the abdomen the sedimentation rate was definitely abnormal. In our experience this statement is true of most cases but not of all cases, and the exceptions are very important. Acute pelvic inflammatory disease offers the most frequent and difficult problem in differential diagnosis from appendicitis. In most patients with acute pelvic inflammatory disease admitted to the hospital, the sedimentation rate is significantly increased, and this provides an extremely valuable differential point between the two diseases (chart 6). However, in certain cases of acute pelvic infection the sedimentation rate may be normal when the patient is first examined. This is undoubtedly due to the fact that the patient is examined soon after the onset of symptoms or that the infection is an initial and mild one. In most of the other cases the infection has been present for some time before onset of the pain¹⁶ (chart 6).

Chart 6 shows the sedimentation rates in a group of cases of acute pelvic inflammatory disease that we have encountered. In two cases the condition was postabortal and in all the others there were acute gonorrheal infections, proved by cultures on chocolate blood agar. The sedimentation rate was significantly elevated in all but four cases. Table 2 shows that these cases all represent an early stage in the infection and that in each case the sedimentation rate rapidly increased in spite of the fact that the leukocytosis was diminishing. The practical point to be made is that the sedimentation rate in acute pelvic inflammatory disease is usually, but not always, increased, and therefore a normal sedimentation rate does not exclude this disease. The same is true of the other acute abdominal conditions such as acute cholecystitis and acute pyelitis or pyelonephritis. In most such cases in which patients are admitted to the hospital the sedimentation rate is significantly increased and this fact serves as a valuable aid in distinguishing these conditions from acute appendicitis but occasion-

ally the sedimentation rate will be found to be normal, especially when the patient is examined early in the course of the illness.

If these exceptions are kept in mind, the sedimentation test will be found to be a very valuable laboratory aid in the differential diagnosis of acute abdominal diseases, particularly those which simulate acute appendicitis.

CONCLUSIONS

We hope that we have been able to prove the following points:

1 If the sedimentation test is to have widespread use in the physician's office as well as in the hospital, the test must be simple.

2 Such a simple test is entirely adequate for practical purposes if certain facts are kept in mind. If a single reading is taken at the end of one hour, a tube such as the Westergren tube, which is 200 mm tall should be used. Shorter tubes may require more frequent determinations if the true rapidity of the sedimentation process is to be determined. The tube must be kept in a strictly upright position. Anemia tends to accelerate the rate of sedimentation, and allowance must be made for this fact, but a routine correction for anemia in each case is unnecessary.

3 When the use of the sedimentation test is restricted to those cases in which it has its chief clinical value, and when the limitations of the test are recognized, it will continue to be an extremely valuable laboratory aid in clinical medicine.

SOME PHASES OF POSTGRADUATE INSTRUCTION IN OPHTHALMOLOGY

WALTER R. PARKER, M.D., Sc.D.

DETROIT

In 1929 I prepared a report for the International Congress of Ophthalmology on the method of undergraduate and postgraduate teaching in Great Britain and her dominions and in North and South America. The report as it pertains to the undergraduate teaching in this country need not concern us here. There is one point in the postgraduate teaching in this country, however, that may be of interest. Questionnaires were sent to all the class A colleges, requesting a statement concerning the facilities for postgraduate instruction in ophthalmology, and replies were received from forty. Of these, seven were reported as offering a systematic postgraduate course in ophthalmology. It is quite impossible to state definitely the number of institutions in which postgraduate training is given for the reason that, in the classification, some reports include only those giving announced courses, while others include those giving instruction to the resident staff. The latter, it seems to me, should be included among those giving graduate work if a comprehensive course is given, even though the number privileged to take the course is limited. This report was made from data collected seven years ago and the situation may be somewhat changed.

When I started to collect material for this address I had in mind to attempt a detailed study of the methods of instruction in the institutions in which it was reported that advanced courses in ophthalmology

16 Smith, C. T., Harper, Thelma, and Watson, Anna. Sedimentation Time as an Aid in Differentiating Acute Appendicitis and Acute Salpingitis. *Am. J. M. Sc.* 189, 383-387 (March) 1935.

Read before the Section on Ophthalmology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, June 9, 1937.

were given I soon realized, however, that the important question before us today is not how the course of instruction is conducted in certain institutions but rather what steps might be taken to increase the number of centers where adequate instruction might be given and that, perhaps, it is more a question of organization than of curriculum. I recently had made a list of names of all the ophthalmologists, and ophthalmologists and otolaryngologists listed in the last American Medical Directory, the names to appear in the new directory to be issued by the International Congress of Ophthalmology. There were, in all, 7,200 names recorded as practicing ophthalmology alone or ophthalmology and otolaryngology. As the names were arranged alphabetically, it is impossible to state definitely the number registered as ophthalmologists. There are ninety-five residencies in ophthalmology approved by the Council on Medical Education and Hospitals, and according to Dr Lancaster there are about 500 students contemplating training in ophthalmology. When one compares the number of ophthalmologists and ophthalmologists and otolaryngologists listed in the directory with the number certificated, the significance of the task undertaken by the board is evident.

It is quite impossible to think of the subject of education in ophthalmology, as it has developed during the past twenty-five years, without a keen sense of appreciation of the results accomplished by the American Board of Ophthalmology. I was not a member of the original board and so do not hesitate to pay my respects to the original members and to acclaim my admiration for the wisdom and foresight they displayed in the organization and administration of the affairs of the board. It was pioneer work, and the results were not accomplished without some opposition. From the first the deliberations of the members were serious and each one gave the best of his talents. Working without precedent as a guide, the members of the board had to develop and correlate all the details. The formulation of specific requirements for certification is not so simple a problem as one might imagine and the board has been subjected to some unjust criticism for not being more definite in its specifications. What it did in establishing the requirements in training was to formulate a certain number of equivalents that would satisfy the board and treated each case on its merits. I think I am safe in saying that, in its most enthusiastic moments, little did the board realize that in such a short space of time the work it instituted would be so generally accepted, become national in scope and be sponsored by the American Medical Association. It is an accomplishment that may well make every ophthalmologist justly proud.

Whatever our ideals may be, the problem before the boards is to meet the situation as it presents itself today and to prepare for future expansion. Progress has been so rapid and the organization has become so complex that, again, time will be required to smooth out the workings of the machinery necessary to develop and coordinate all the varying interests. All ophthalmologists are familiar with the organization of the Advisory Board for Medical Specialties as it is now constituted. Some phases of the situation, as it concerns postgraduate instruction in ophthalmology, will be considered, although what I have to say might be applied to any one of the clinical specialties represented by the Advisory Board for Medical Specialties. In general, the question of postgraduate instruction as it pertains to the present organization presents two major

points: first, the formulation of requirements of the board for certification and, second, the classification and expansion of approved centers where adequate instruction will be given.

In order to acquaint those interested in coming before the board as candidates for certification, and for the benefit of instructors, the American Board of Ophthalmology has prepared a syllabus to indicate to candidates what ground they are expected to cover in the study of the subjects required and, for teachers, courses of study more extensive than are at present commonly offered. If to these plans are added a classification and suggested organization of the clinics where adequate instruction may be obtained, the whole will not only encourage those who are now offering sufficient training but lead to the development of other teaching centers. The members of the board are all practical men with teaching experience, perfectly familiar with conditions as they exist, and certainly they will not be unreasonable in their requirements. The requirements can be raised as the teaching facilities will warrant. The length of time required in preparation might not be the same in all the specialties but, as Dr Lancaster¹ says, "In the end each board must be admitted to be the best judge of the standards for its own specialty."

The increasing appreciation of the dependence of ophthalmology on the general medical examination is well shown by the passing of the isolated eye hospital. To meet this situation the special hospitals are either adding a staff representing the essential branches of medicine or are becoming an integral part of a medical center. In many institutions the recognition of the importance of certain specialties has resulted in the establishment of separate departments. Just what determines when a branch of medicine or surgery should be given a special department is difficult to say. Apparently, those that have been so recognized in recent times have been brought about more through the pre-eminence of individual workers than through any sympathetic plan on the part of the governing bodies. Undoubtedly, more progress has been made in every instance when a certain autonomy has been granted than would have been the case had the department remained submerged. I would suggest that, when the Council on Medical Education and Hospitals makes its inspection of clinical centers, the attitude of the institutions toward the specialties be considered. This is important for the reason that the services of the best teachers will not be available unless the position as senior member of the staff carries with it the dignity and responsibility of professional and administrative authority.

While adequate clinical instruction is given in many hospitals, instruction in the basic subjects is given in only a very small number. The suggestion has been made that intensive courses in the basic subjects be given in centers to be established in various parts of the country. If centers could be established and maintained where the basic subjects could be given, it might be ideal, but such opportunities will not, in all probability, be available for some time to come. I am well aware of the fact that some educators believe that clinical teaching should not be given until after the basic subjects are taught. On the other hand, there is a tendency to incorporate clinical teaching in the pre-clinical year in undergraduate courses. Replies to inquiries concerning instruction in the basic subjects

¹ Lancaster W. B. Educational Standards of Ophthalmology That Must Be Met at This Time. *Arch. Ophth.* 17: 401 (March) 1937.

revealed the fact that there was no general understanding as to how much instruction in these subjects should be required to qualify an ophthalmologist. This is a question for the board to determine. The present system of presenting instruction in the basic subjects during the period of clinical training has worked satisfactorily for the most part, and perhaps for the present it should not be discouraged and an effort should be made to arrive at a more general agreement as to the exact requirements in the fundamental subjects.

The main question before us today is: How can the clinical and teaching material we have at hand be utilized in order to increase the number of teaching centers?

The epoch making results accomplished by the Council on Medical Education and Hospitals in the classification of medical schools is well known. My understanding is that a similar classification of the available teaching centers in the specialties is to be made. The coordination of facilities for the teaching of specialties is to be undertaken by the Advisory Board for Medical Specialties. It would seem that a practical working organization would be for the various boards to determine the requirements that could be properly enforced at any particular time, the Council on Medical Education and Hospitals to designate available teaching centers, all to be coordinated by the Advisory Board for Medical Specialties. The essential principle underlying the specifications for certification in a specialty, as well as in the classification of teaching centers, is to keep the requirements within the bounds of performance. The requirements of the board could be increased as the teaching facilities would warrant. The process should be one of evolution and not of legislation. The object is not to produce superstudents—they have an uncanny way of looking after themselves—while all the legislation in the world would not make an unborn research worker productive. The classification of institutions might include not only those that offer opportunity for instruction in all the branches required but such as offer acceptable instruction only in clinical training and those that offer work in the basic subjects. If this information was available the student could take the work in a manner most convenient to himself. It matters not where one does one's work so long as one meets the training requirements and can pass the examination.

Ophthalmology cannot be a thing apart from the field of medicine and surgery, and to be thoroughly appreciated the work must be coordinated with the essential branches of both. The most favored ophthalmic service is one that is an integral part of a general teaching hospital. The next most favored is one associated with a general nonteaching hospital or a special hospital which has an auxiliary staff covering the essential branches of medicine, surgery and dentistry. Is it not true that there are many clinics with an abundance of clinical material and efficient clinical staffs that are doing good work as far as care of the patients is concerned but where very little attention is being paid to the training of assistants? Either from lack of interest or from lack of cooperation on the part of the management, things go unchanged year in and year out. By proper organization could not many of these clinics be developed into teaching centers and thereby contribute their quota toward the solution of the educational problem? The classification of the available teaching units contemplated by the Council on Medical Education and

Hospitals should give the whole movement an added impetus that will, in the near future, lead to gratifying results.

While not offering it as an ideal plan, I should like to speak of a service with which I am familiar, the organization of which was as follows. The staff was made up of rotating and permanent members, the rotating members being on full time and the permanent members on part time. There were three members of the rotating staff, each serving for three years after one year's service in a general hospital, one year as intern, one year as junior assistant and one year as senior assistant. In addition to the regular work, one evening a week during the college year was devoted to instruction in the basic subjects, and during the senior service the one in charge quizzed the junior students, and all members of the staff assisted in demonstrating cases to the members of the section of the senior class. As a matter of fact, the plan as outlined was instituted as part of an organization designed to teach ophthalmology to undergraduate students. After the establishment of the American Board of Ophthalmology the instruction given the rotating staff members was modified to meet the requirements of the board. Throughout the entire period the reading material was suggested and frequent informal meetings of the rotating and permanent staffs were held. Each year one man was graduated who was well trained in ophthalmology and who had had some experience in teaching. The details of clinical and laboratory work need not be given, as they would vary somewhat in each clinic. To increase the available number of centers of instruction, would it not be possible, by sympathetic assistance and suggestions concerning organization and enlistment of qualified teachers, to develop similar services in many hospitals? The number of students enrolled would depend on local conditions and the term of service on the requirements of the board. In special hospitals with more than one clinic functioning daily a rotating staff might be added to each service instead of having a single staff for the entire hospital as at present. I am familiar also with the reorganization of a clinic designed primarily to awaken interest in the basic subjects. An outline of the courses was prepared by the chief of clinic, and the most promising members of the staff were selected to develop a course and to present it to the staff. In a comparatively short time an interest in the basic subjects was created that permeated the whole group. The courses were very elementary and, as so often happens, the greatest benefit came to the members of the staff who gave the course.

One cannot speak of postgraduate education in ophthalmology without considering the part played by short courses. While short courses serve as a review and may be a source of stimulation to those who take them, the benefit derived from this method of instruction cannot in any way be compared to that received in a residency or from being a member of the staff. The benefit to be derived through having clinical responsibility cannot be acquired in any other way.

There is no cause for pessimism concerning the progress of ophthalmology in this country, when one realizes the advance that has been made during the last twenty-five years. Probably the most important influence in this change has been the American Board of Ophthalmology, the activities of which not only have elevated the standards of clinicians but have had a most beneficial influence on the quality of teaching offered. An outstanding advance in the instruction offered in oph-

thalmology has been manifest through the systematic courses given to resident staffs. The rate of progress may have been slow, but there is every reason to believe that it will be greatly accelerated by the activities of the Advisory Board for Medical Specialties as sponsored by the American Medical Association.

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PAIN LOW IN THE BACK AND "SCIATICA"

DUE TO LESIONS OF THE INTERVERTEBRAL DISKS

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In previously published papers,¹ attention was drawn to the role of the intervertebral disks in causing intractable "sciatic" radiation of pain from pressure of herniated disk tissue on one or more roots of the cauda equina in the lower lumbar region. At first this syndrome was thought to be rare, but investigation has revealed that a considerable number of cases previously classified as sacro-iliac or lumbosacral strain were really rupture of an intervertebral disk. This diagnosis should be considered in the study of every case of strain low in the back and "sciatica." This paper is a joint effort to correlate the information obtained from a study of fifty-eight patients with proved rupture of an intervertebral disk in the lumbar region, operated on at the Massachusetts General Hospital from 1927 to June 1937.

A detailed historical review of the literature on the intervertebral disk is beyond the scope of this paper. A fairly complete bibliography is appended to articles by Barr^{1a} and Hampton and Robinson^{1c}. The first report of injury to an intervertebral disk in modern medical literature seems to have been made by Kocher² in 1896. To Goldthwaite³ belongs the credit for first (1911) suggesting that injuries to intervertebral disks might be a frequent cause of "lumbago" and "sciatica." The surgical removal of "chondromas" of the intervertebral disk pressing on the spinal cord or nerve roots has been described by various neurosurgeons, among them Adson,⁴ Elsberg,⁵ Dandy,⁶ and Mixter.⁷ Mixter

and Barr^{1a} pointed out in 1934 that these "chondromas" were not neoplasms but were simply herniations or ruptures of normal intervertebral disk tissue into the spinal canal and that they were a frequent cause of "sciatica" and strain low in the back. They reported nineteen proved cases from the Massachusetts General Hospital. Later reports by us^{7a} have described in detail the neurologic and neurosurgical, roentgenologic and orthopedic aspects of these lesions.

SIGNS AND SYMPTOMS

The clinical syndrome of rupture of a lumbar intervertebral disk with pressure on one or more roots of the cauda equina is similar to sacro-iliac or lumbosacral strain with "sciatica." In fact, a clinical differential diagnosis in many cases is impossible. The patient is usually a healthy, vigorous man between the ages of 20 and 50 whose chief complaint is pain radiating unilaterally down the posterior part of the thigh and the posterolateral part of the calf. There may be pain in the buttock or in the lumbosacral or sacro-iliac region. There may be a sensation of numbness or tingling in the involved extremity. Bilateral radiation of pain, muscular weakness or paralysis and incontinence of urine and feces are occasionally found and indicate severe damage to the cauda equina. A history of trauma to the lower part of the back was obtained in about 80 per cent of our cases. The most common type of trauma was sustained when the patient was lifting a heavy weight and felt something "give way" in the lower part of the back. In about one half of the cases trauma immediately preceded the onset of symptoms. Almost half of our patients had a history of remissions and exacerbations of their symptoms. Practically without exception they had had prolonged conservative orthopedic treatment consisting of rest in bed, support of the back and exercises.

On physical examination, limitation of motion of the lumbar part of the spine by muscle spasm is the most characteristic observation. The usual lumbar lordosis is diminished or obliterated. Kyphosis may be present to such an extent as to simulate vertebral collapse. A fixed list ("sciatic scoliosis") of the lumbar part of the spine, which occurs toward or away from the affected side with about equal frequency, is commonly noted. Straight leg raising is limited almost always unilaterally and sometimes bilaterally. There is local tenderness over the lumbar spinous processes and inter-spinous ligament at the site of the lesion in many of the cases. There may be tenderness over the buttock, the sacro-iliac ligaments and the course of the sciatic nerve. In most cases certain positions relieve and others aggravate the radiating pain.

Neurologic changes, motor, sensory and reflex, may be totally absent in perhaps half of the cases. The most common neurologic finding is absence or diminishing of the ankle jerk on the affected side. Sensory impairment or anesthesia is rarely demonstrated because, as Foerster⁸ has shown, two or more sensory roots must be severed before anesthesia is demonstrated in the corresponding dermatome. A few patients have shown complete or partial paraplegia, the lesion being so large that it occluded the spinal canal.

If the history, physical examination and ordinary roentgenograms suggest the possibility of a ruptured

From the Massachusetts General Hospital.
Read before the Section on Orthopedic Surgery at the Eighty Eighth Annual Session of the American Medical Association, Atlantic City, N. J. June 10, 1937.

1 (a) Mixter, W. J. and Barr, J. S. Rupture of the Intervertebral Disk with Involvement of the Spinal Canal. *New England J. Med.* 211: 210 (Aug. 2) 1934. (b) Mixter, W. J. and Ayer, J. B. Herniation or Rupture of the Intervertebral Disk into the Spinal Canal. Report of Thirty Four Cases. *ibid.* 213: 385 (Aug. 29) 1935. (c) Hampton, A. O. and Robinson, J. M. The Roentgenographic Demonstration of Rupture of the Intervertebral Disk into the Spinal Canal after the Injection of Lipiodol with Special Reference to Unilateral Lumbar Lesions Accompanied by Low Back Pain with Sciatic Radiation. *Am. J. Roentgenol.* 36: 782 (Dec.) 1936. (d) Barr, J. S. Sciatica Caused by Intervertebral Disk Lesions. *J. Bone & Joint Surg.* 19: 323 (April) 1937.

2 Kocher, Theodor. Die Verletzungen der Wirbelsäule zugleich als Beitrag zur Physiologie des menschlichen Rückenmarks. *Mitt. a. d. Grenzgeb. d. Med. u. Chir.* 1: 415 1896.

3 Goldthwaite, J. E. The Lumbosacral Articulation. An Explanation of Many Cases of Lumbago, Sciatica and Paraplegia. *Boston M. J. S. T.* 164: 365 1911.

4 Adson, A. W. Diagnosis and Treatment of Tumors of the Spinal Cord. *Northwest. Med.* 24: 369 (July) 1925.

5 Elsberg, C. A. The Extradural Central Chondromas (Eccchon droes). Their Favorite Sites, the Spinal Cord and Root Symptoms They Produce and Their Surgical Treatment. *Bull. Neurol. Inst. New York.* 1: 350 (June) 1931.

6 Dandy, W. E. Loose Cartilage from Intervertebral Disk Simulating Tumor of the Spinal Cord. *Arch. Surg.* 19: 660 (Oct.) 1929.

7 Mixter, W. J. Spinal Column and Spinal Cord in Lewy. *Dean Practice of Surgery*, Hagerstown, Md. W. F. Prior Company, Inc. 1932. vol. 12 chap. 3 p. 76.

7a Mixter and Ayer^{1b}, Hampton and Robinson^{1c}, Barr^{1d}
8 Foerster, Otfried. The Dermatomes in Man. *Brain* 56: 1 (March) 1933.

disk as the cause of intractable "sciatica," lumbar puncture is indicated. It should be done as low as possible, preferably at the lumbosacral articulation, and the first 2 to 5 cc of fluid removed should be examined for the total protein content. Elevation of the total protein content is apparently due in most instances to irritation of the nerve roots and not to a block in the circulation of the cerebrospinal fluid. If the total protein is determined on successive fractions of fluid, it is often observed that the first fraction contains much more than the last one. Hence, if the lumbar puncture is done too high, or too large a quantity of fluid is removed, a false normal value may be found. Elevation of the total protein above 40 mg per hundred cubic centimeters was present in all but six of our cases. If the content is elevated we do not hesitate in proceeding with the diagnostic use of iodized oil, but if it is within normal limits we must rely on appraisal of the clinical picture in deciding whether or not to use iodized oil.

A study of the regular roentgenograms of the lumbar part of the spine revealed no significant variation from the normal in about one half of our cases. This type

TABLE 1—Incidence by Sex and Age

Sex			Age	
Women	13	22 6%	Youngest	20
Men	45	77 4%	Oldest	53
Total	58	100 %	Average	37

TABLE 2—Location of Lesion

	Cases	
Disk between 2d and 3d lumbar vertebrae	1	
Disk between 3d and 4th lumbar vertebrae	4	
Disk between 4th and 5th lumbar vertebrae	35	60%
Disk between 5th lumbar and 1st sacral vertebrae	17	30%
Disk between 1st and 2d sacral vertebrae	1	

of examination, therefore, cannot be relied on as an indication for or against the injection of iodized oil. Narrowing of the intervertebral joint spaces, with or without formation of new bone about the margins of the joint, occurred in one third of the lesions located at the fourth lumbar disk, but it was often associated with narrowing of other intervertebral joint spaces, particularly the space between the fifth lumbar vertebra and the sacrum. Sciatic scoliosis and partial obliteration of the normal anterior lordotic curve of the lumbar part of the spine occurred in most of the cases. The familiar Schmorl's⁹ nodule in the body of a vertebra was seen only occasionally and is purely an incidental observation.

EXAMINATION WITH IODIZED OIL

The roentgenoscopic examination after the injection of iodized oil is the most important step in the diagnosis. The lesion can be accurately localized and readily demonstrated on the roentgenogram. It is necessary that the examination be done with the proper technic. In a series of over 100 cases we observed no permanent ill effects which could be attributed to the use of iodized oil in the spinal subarachnoid spaces.

Five cubic centimeters (one ampule) of iodized poppy-seed oil is injected into the lumbar canal. The

roentgen examination may be done immediately after the injection or at any time thereafter up to several months. It may be necessary to give the patient appropriate drugs for the relief of pain so that he can cooperate in the examination. The equipment for the examination consists of a tilting roentgenoscopic table and a quick change-over switch so that instantaneous roentgenograms can be taken during roentgenoscopy. The usual roentgenoscopic equipment may, however, be used with fairly good results in the study of the lower lumbar area. The advantages of films taken during roentgenoscopy cannot be overestimated. Before the examination is begun the patient is allowed to sit up for a few moments in order to collect the iodized oil as one mass in the sacral culdesac. He is then placed facing the roentgenoscopic table in the upright position and is manipulated by tilting the table under roentgenoscopic control, the oil being thus forced to flow slowly up and down the anterior aspect of the subarachnoid spaces when the patient is tilted to the horizontal or to the Trendelenburg position. Particular attention is directed toward maintaining the iodized oil in a single mass, and it is possible by this method to place the small quantity of iodized oil in practically any portion of the lumbar canal. Since the lesion to be demonstrated is a small anteriorly placed extradural nodule at the disk levels, the iodized oil must be brought into contact with the anterior dural surfaces, and in order to do this the patient must lie face down on the table. If a questionable filling defect is observed, an effort is made to obliterate it either by turning the patient from side to side or by repeating the tilting process. A constant filling defect in any region is recorded by serial roentgenograms taken in various angles of rotation of the patient. Originally the upper dorsal region was usually examined, in the belief that multiple ruptures of the disks might be present. Multiple ruptures have proved not to be the case. The upper dorsal area is now not examined when the patient has no symptoms referable to that portion of the spinal canal. It is possible that this fact may account for the infrequency of some of the untoward reactions others attribute to the use of iodized oil. The examination of the upper dorsal area is, however, carried out, when indicated, in the same manner as the examination of the upper lumbar and lower dorsal areas. Care should be taken to prevent the iodized oil from entering the skull, and this can be done by examining the cervical area only with the patient in the face-down and lateral position.

If a tilt table is not available, the normal lordotic curve of the lumbar vertebrae and the inclined plane of the sacrum may be utilized to force the flow of iodized oil toward the head when the patient lies face down on the table. By having the patient sit, the iodized oil may be returned repeatedly to the sacral culdesac. For this type of examination it is necessary that the patient be able to shift his position rapidly or that he be able to assume the face-down position quickly without remaining for an appreciable time on his side, because the iodized oil may already be above the site of the suspected lesion before roentgenoscopy is possible. It is also necessary that a quick change-over switch be available if satisfactory roentgenograms are to be taken. In this manner, without a tilting table, it is possible to examine the greater portion of the lumbar area, but it is practically impossible to obtain a satisfactory examination of the dorsal and cervical areas.

⁹ Schmorl, Georg and Junghann, Hervert. Die gesunde und kranke Wirbelsäule im Röntgenbild. Leipzig: Georg Thieme, 1932.

INTERPRETATION OF X-RAY APPEARANCES

A correct understanding of the results of roentgen examination is dependent on an accurate knowledge of the anatomy of the cauda equina and the nature of the lesion to be demonstrated. The anatomic considerations are beyond the scope of this paper, and only typical examples of the filling defects produced in the shadow of the contrast medium can be discussed. The posterior rupture of the intervertebral disk which produces unilateral symptoms consists of a rounded nodule 1 cm or more in diameter. This nodule lies just lateral to the strong central portion of the posterior longitudinal ligament and is directed toward the lamina of the vertebra (fig 1).

In figure 1 the cauda equina together with the dura are shown to have been completely removed. The intervertebral disk is covered by the ligamentous structures. The rounded nodule represents typical rupture of a disk.

Figure 2 illustrates the relation of a ruptured disk nodule to the dura and the sheathed portions of the nerve roots. The nerve roots are pressed on before

acquires its sheath. At the point of exit of the nerve root there is a triangular pouch beneath and medial to it, which fills readily with iodized oil, and these spaces have been termed the axillary pouches. They are of importance because they may be used to identify nerve roots.

Figure 4 is a roentgenogram taken with the patient in the upright position after 5 cc of iodized oil had been injected into the subarachnoid spaces. A fluid level can be seen opposite the fourth lumbar vertebra. There is asymmetrical filling of the nerve sheaths and fairly symmetrical filling of the axillary pouches. No abnormality is demonstrated. These observations were confirmed by operation. In this case the degree of filling is sufficient for a complete examination of the fourth and fifth lumbar disk areas without its being necessary to change the position of the patient. In each case we examined in which a ruptured disk was found at operation the defect was clearly demonstrated in the anteroposterior view. If no filling defect is seen in the anteroposterior view the examination is considered to show no evidence of ruptured disk. The

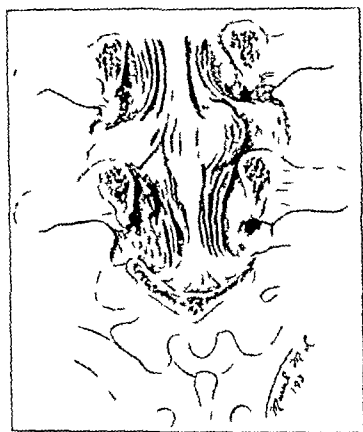


Fig 1—Schematic drawing of typical unilateral posterior rupture of the fourth lumbar disk. The laminae pedicles and cauda equina have been removed. The nodule projects backward toward the lamina.

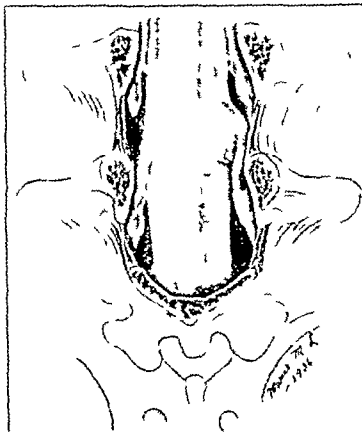


Fig 2—The cauda equina covers the nodule of the ruptured disk. It is usually more easily palpable than visualized. Note the relation of nodule to nerve root and pedicle.

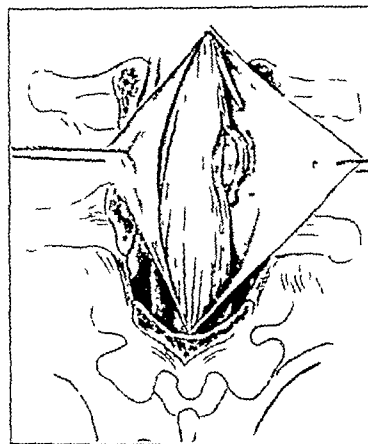


Fig 3—Appearance after opening of the dura. The relation of the intradural roots to the extradural mass is seen. Compare this illustration with the roentgenograms taken after the injection of iodized oil.

they leave the subarachnoid space, that is, in the area which can be readily filled by iodized oil. Note the relation of the nerve root to the base of the pedicle. The nodule is nearly always opposite the inferior portion and articulating facet of a lamina.

In figure 3 the cauda equina is in position and the dura has been opened. An extradural, anteriorly placed unilateral mass is seen displacing one nerve root markedly and its neighbor only slightly. The degree of deformity or displacement of these roots depends on the size and location of the lesion.

It is the purpose of the roentgen examination after the injection of the contrast medium to demonstrate filling defects corresponding to this rounded mass and the displaced nerve roots. If the cauda equina is normal there is symmetrical filling of the subarachnoid spaces. Iodized poppy-seed oil is a viscid substance and the space around the nerve roots is only potential, and therefore some time is often required for complete filling of the lateral portions of the subarachnoid spaces and particularly the nerve sheaths. Asymmetrical filling of the nerve sheaths is a normal observation. Each nerve root lies in contact with the lateral wall of the arachnoid membrane before it makes its exit and

lateral view is seldom of definite value because the defect is unilateral and is not usually seen in this view, being obscured by dense iodized oil which occupies the normal side of the canal. On the contrary, the lateral view may show minor pressure defects at the disk levels which are of no clinical significance and should be disregarded.

Figure 5 is the reproduction of a roentgenogram taken instantaneously during roentgenoscopy as the patient lay face down on the tilt table. One half of the iodized oil is above and one half below the fourth lumbar disk. The filling defect on the right side (marked by the arrow) is characteristic of a unilateral rupture of a disk. The filling defects produced by the compressed nerve roots are seen in the upper lateral margin of the defect, and the convex medial defect corresponds to a medially displaced nerve root. Compare this illustration with figure 3. Large defects in the shadow are produced by large lesions but it does not follow that small filling defects are produced by small lesions because the nodule may extend laterally beyond the shadow of the iodized oil.

In figure 6 the defect is unusually large and simulates an intrinsic tumor, but in the lateral view it could be

seen to occupy the anterior aspect of the cauda equina opposite the disk area. There is complete filling of the subarachnoid spaces opposite the body of the fourth lumbar vertebra above the lesion, but the root sheaths show little filling. The examination was done with the patient in the upright position. The filling defect proved to be a rather large unilateral rupture of the intervertebral disk. Figures 5 and 6 represent ruptures of the disks between the fourth and fifth lumbar vertebrae, and it is thought that all clinically important ruptures of the disk at this and higher levels can be demonstrated in the manner described. Ruptures of the disk between the fifth lumbar vertebra and the sacrum are more difficult to demonstrate, because of the anatomic relationship, for example the first sacral root may cross the disk outside the area containing the iodized oil and therefore not be demonstrable. This condition however, did not occur in our series of cases.

A typical unilateral rupture of the fifth lumbar disk is illustrated in figure 7. The character of the defects is quite similar to those seen elsewhere in the lumbar area, but the defects are often smaller and in some instances can be visualized only on the roentgenogram. It is therefore advisable that roentgenograms be taken during fluoroscopy as the iodized oil crosses each disk area. The fifth disk area can usually be more accurately examined several days after the oil has been injected because more complete filling of the nerve

sheaths and lateral portion of the canal will take place. For this reason we usually reexamine within one or two weeks all patients whose examinations gave negative results.

The rupture that is seen in figure 7 definitely involves the first sacral root but may also compress the second and third sacral roots.

THE ACCURACY OF ROENTGEN EXAMINATION WITH IODIZED OIL

The filling defect of the ruptured disk fragment was demonstrated in each of a consecutive series of thirty-one patients examined with iodized oil. In one of this series the defect was present but was overlooked. An outright diagnosis of ruptured intervertebral disk was made in twenty-three cases.

When the lesions were unusually large or caused a complete block they were more commonly interpreted as due to tumor. Fractures of the laminae thickening of the ligamentum flavum and arachnoiditis have pro-

duced confusing pictures with iodized oil. One exploration after a positive roentgen diagnosis and six after a negative diagnosis gave negative results.

OPERATIVE TECHNIC

We believe that this lesion tends to weaken the spine and that exploration of the spinal canal will weaken it still further. Therefore, we plan our approach to preserve the strength of the spine as much as possible and follow laminectomy by a bone graft if the patient does heavy work.

It is not necessary to remove more than one or at most two laminae if localization has been accurate, and the lamina should be resected widely only on the side of the lesion. The bulging mass is felt by palpating the lumbar sac. If it is situated far out toward the intervertebral foramen, the dural sac is retracted toward the midline until it is exposed. If the mass is in the midline the dura is opened as usual for the removal of a tumor of the cord and then opened again anteriorly over the mass. As the extruded fragment lies anterior to the posterior longitudinal ligament the latter structure is incised, and then the mass of fibrocartilage is easily removed. It frequently lies free, with no attachment to the edge of the disk. The iodized oil is then removed, the bone graft placed and the wound closed as usual. A more complete discussion of the surgical technic will be found in a forthcoming paper to be published in the *Annals of Surgery*.

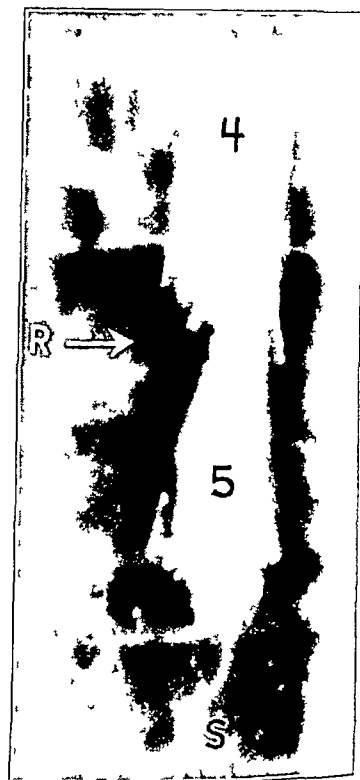


Fig 5—Typical filling defect produced by unilateral rupture of the fourth lumbar disk. The two serrations at the upper margin of the defect are produced by compressed nerve roots within the subarachnoid space. The iodized oil is equally distributed above and below the disk level when the patient is face down.

HISTOLOGY

Microscopic examination of the removed specimen reveals that it is identical with the normal intervertebral disk. Sometimes it is from the annulus fibrosus and sometimes from the nucleus pulposus, often elements of both tissues are present.

END RESULTS

It is interesting to note that almost every patient is immediately relieved of pain in the leg after the operative removal of the ruptured disk. In study of the end result evaluation of ability to work as well as of relief from pain was attempted. Eight cases are too recent to be included in the study of the end results. Of the remaining fifty patients, thirty-two are well. The



Fig 4—Normal filling of the lower lumbar subarachnoid spaces after the injection of 5 cc of iodized oil. The patient is in the upright position. Asymmetrical filling of the nerve sheaths is a normal variation.

have no pain and are able to engage in the activities they pursued before they were ill. Twelve additional patients are markedly improved but have some minor complaint, such as slight pain or sensation of weakness in the back, which prevents them from being rated as well. Two patients have had relapses and their operations are classed as failures. There was one post-operative death. Three other patients have died of incidental causes but were relieved of their pain during their postoperative life.

COMMENT

Certain points concerning the diagnosis and care in these cases need emphasis.

In our present state of knowledge we cannot yet make an accurate clinical diagnosis of ruptured intervertebral disk and must rely on roentgen studies after the subarachnoid injection of a contrast medium to verify clinical suspicions. Iodized oil should not be injected into the spinal canal of every patient suffering from "sciatica." Prolonged, adequate, conservative orthopedic care should be insisted on in every case of suspected rupture of an intervertebral disk before iodized oil is used. Injection of saline solution or procaine hydrochloride, manipulation and fasciotomy (Ober¹⁰) may be included as "conservative" measures



Fig 6—The rupture is unusually large and presents somewhat the appearance of an intradural tumor but its extradural position can be readily established by roentgenograms in the lateral view. The patient is in the upright position and there is complete filling above the lesion. Ruptured disk was found at operation.

If these fail to relieve the sciatica the diagnostic use of iodized oil is indicated before lumbosacral or sacroiliac fusion is resorted to, particularly if the total protein in the spinal fluid is elevated. The operation (laminectomy and spinal fusion) is a formidable one

and should not be advised except on the clearest indications and after the use of conservative measures have failed to give relief. The technic of examination with iodized oil is exacting, but in competent hands the accuracy of diagnosis is very high.

Localized arachnoiditis with matting together of the nerve roots has been found associated with ruptured

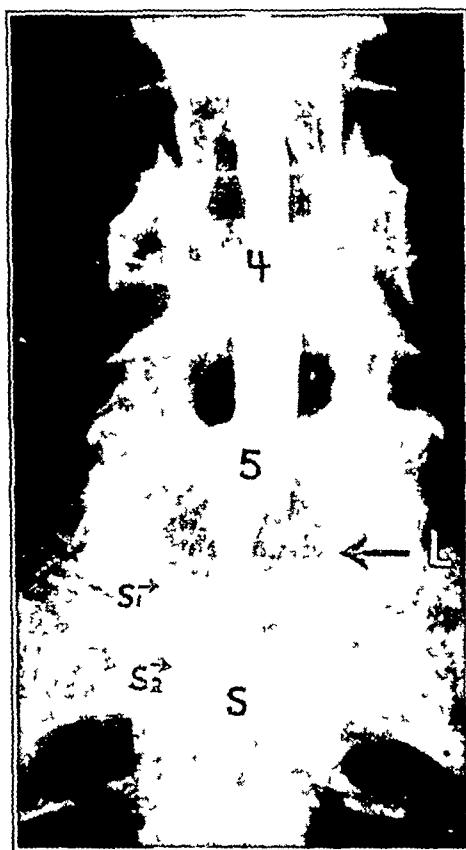


Fig 7—Filling defect produced by posterior rupture of the fifth lumbar disk. The sheaths of the first and second sacral roots are well filled on the side opposite the lesion. The defect is similar to but less definite than the defects seen at higher levels.

disk in at least three cases. We believe that it may have been caused by localized hemorrhage or trauma to roots and meninges at the time the disk was ruptured. In two cases in which ruptured disk was suspected,

TABLE 3—Status After Operation

	Cases
Well	32
Improved	12
Operative death	1
Since died	3
Failures	2
Recent cases	8
Total	58

the condition proved to be arachnoiditis without evidence of ruptured disk. It may be that the same sort of injury may cause either lesion or a combination of the two.

CONCLUSIONS

Rupture of a low lumbar intervertebral disk is one of the causes of severe intractable sciatic pain. The diagnosis can be made with a high degree of accuracy. The operation for removal of the extruded fragment

10 Ober, Frank R. Relation of the Fascia Lata to Conditions in the Lower Part of the Back. *J. A. M. A.* 109:554 (Aug. 21) 1937.

presents certain technical difficulties and is a procedure of some severity. The operative mortality is low. The percentage of cures is high.

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ABSTRACT OF DISCUSSION

DR GEORGE I BAUMAN, Cleveland. Low back pain with or without "sciatica" is extremely common and easily diagnosed but its exact etiology is often veiled in deep mystery. The solution of this problem is facilitated by the method of exclusion: one excludes first the more common causes of such disability and only as a last resort subjects the patient to lumbar puncture and injection of iodized oil to discover an uncommon lesion of the intervertebral disk. Schmorl discovered a prolapse of the disk in 38 per cent of 3,000 spines examined at autopsy but rarely found a protrusion extending into the vertebral canal. Lesions of the disk, of the nucleus pulposus or even of the spine itself have been reported following a spinal puncture. The injection of iodized oil may result in untoward reactions, as suggested by the authors. A subsequent laminectomy may add to these possible hazards. To reduce this problem to its simplest terms and determine the approximate proportion of patients who might be benefited by this method of diagnosis and treatment, certain general rules might be laid down, always remembering that there are exceptions to all rules. 1. The nomenclature could be simplified. The authors have concluded that these are cases of neuritis. As "sciatica" does not cover the various lesions, the term "lumbosacral neuritis" is suggested. 2. Neuritis is usually due to absorption of some toxin most commonly from a focus of infection. Every such possible focus should be eliminated even to the extraction of a single nonvital tooth. After elimination of a focus of infection it may be necessary to wait several weeks for full benefit to show. 3. There remain a certain group of cases of neuritis due to pressure on a nerve root. This pressure may be within or outside the vertebral canal. The most likely point of pressure outside the canal is where the nerve root crosses the transverse process. In my experience many cases of intractable neuritis have been relieved by removal of the transverse process. The operation of transversectomy is devoid of many of the dangers of a laminectomy. The possibility of pressure of a transverse process or at the intervertebral foramen should be eliminated before one resorts to spinal puncture, injection of iodized oil or laminectomy. In the remaining cases there should be a clear history of trauma to justify the procedure. Even with such a careful sifting of cases there remain a certain number in which an accurate diagnosis can be made only by the technic described by Dr Barr and his associates. If then it is a proved case of intractable lumbosacral neuritis due to pressure by a herniated disk, a laminectomy is indicated and justified.

DR SAMUEL J LANG, Evanston, Ill. I should like to raise a few questions which must have occurred to those who have encountered these cases. The first question concerns patients having the clinical picture of unilateral sciatica and yet showing no visible disturbance of the disk on the x-ray film. That raises the question as to whether the annulus fibrosus can, in the absence of the nucleus pulposus, sustain the weight of the torso for any considerable time. Second, there arises the embarrassing experience which is best explained by the brief recitation of a case history. An intelligent business man sought relief from a severe unilateral sciatica and saddle area type of pain. For a period of three months he had walked with a shuffling gait because of the accompanying distress. He had been attended by several physicians, including myself, without relief. The x-ray films showed a complete flattening of the fifth lumbar disk. Surgical intervention was advised, but the patient was subsequently introduced to a gentleman in New York City, neither physician, osteopath nor chiropractor, who in three treatments provided complete relief. Three months has now elapsed without recurrence of symptoms. This type of response occurs with sufficient frequency to warrant investigation. It is my purpose to investigate this particular case.

DR F L REICHERT, San Francisco. In cases in which one places 5 cc of iodized oil in the spine and no operation is instituted because one does not find any intervertebral distur-

bance, the iodized oil remains in there. Some physicians have been hesitant about leaving that amount of so called innocuous material in the spinal canal. If there is any evidence of meningeal irritation, iodized oil has been found to produce further arachnoiditis. Before iodized oil became available there was air, and Dr Dandy for years has used air in the spinal canal so I resorted to the use of air and I can demonstrate the lesions with air just as readily as I can with iodized oil. When 10 or 15 cc of air has been used it is allowed to ascend into the cerebral subarachnoid spaces, where it is absorbed in ten or fifteen minutes, and that is the end of the story.

DR PHILIP LEWIN, Chicago. This is one of the most important papers that have come before our section and I think it is up to this group to try to put this matter on a definite basis. I would like to cite the case of a man who has been treated for a lumbosacral lesion. He has been examined by four recognized orthopedic surgeons in this room. He went to New York, where he saw a friend of his, a neurosurgeon, who said "This is the most typical case of prolapsed disk that I have seen this month. It should be operated on." The man returned to Chicago and saw one of the best neurologists in the city who said "If there is one thing I think it is not, it is an intervertebral disk lesion." I said "There are four men at a certain clinic I would like to have you see; all these men have written on this subject." After five days' examinations at a certain clinic, four especially interested men said "It is not a nucleus pulposus lesion." I am waiting for him to go back to New York and have his friend the neurosurgeon operate on him. One of the neurosurgeons in Chicago said to me "If I am ever found in a condition where I have to have excision of a nucleus I want the laminectomy, but I don't want an iodized oil injection showing what his opinion was of the injection of iodized oil. He would rather have the laminectomy as an exploratory procedure. I think it is important that within the next year or two these patients are going to be sent from pillar to post. They are losing their confidence in the doctors to whom they have been and too many of them are going to other places and too few of them will be relieved."

DR W J MINTER, Boston. There have been a good many questions raised concerning rupture of the intervertebral disk, and especially the question of the use of iodized oil. It has seemed to us that iodized oil is a substance which we would not use if we could help it, but in order to get the information that we wish both for the diagnosis and for accuracy of localization in order that we might operate on our patients with as little exposure as possible, we have used it and we have used it in practically every case in which we have operated. We have used iodized oil in this amount in about twenty cases in which no lesion was demonstrated by the use of iodized oil. Of those cases we have yet to see one in which any serious permanent lesion has occurred as a result of the use of iodized oil. There is no question that if we can find some other substance to substitute for iodized oil or if injection of air will give us equally good results, which with all due respect to Dr Reichert I rather doubt, we shall certainly give up the use of iodized oil. Until that time we shall keep on using it. Concerning the question of manipulation in these cases, treatment by osteopaths and so on, I think there is great danger of increasing the pain and increasing the disability. We have seen one or two cases in which marked damage occurred by sudden strain after symptoms had been present for a period of years. Operation should consist of a laminectomy of one lamina only in most instances with the lamina left long on one side the side opposite the lesion and wherever there is the slightest evidence of abnormal mobility in the spine we believe that a fusion operation of some sort should be combined with the laminectomy. I suppose that we have performed fusion operations in probably 40 or 50 per cent of the cases in which operation has been performed. Ruptured disk is one of the few causes of neuritis in the lower lumbar and upper sacral nerves in which a definite lesion can be demonstrated at operation. We have had a few negative explorations, but those negative explorations have been almost entirely in patients in whom a fusion was to be done if the exploration was negative. The exploration was an incident to a fusion operation which was carried out as soon as the laminectomy was finished.

COCCYGODYNIA AND PAIN IN THE
SUPERIOR GLUTEAL REGIONAND DOWN THE BACK OF THE THIGH
CAUSATION BY TONIC SPASM OF THE LEVATOR
ANI, COCCYGEUS AND PIRIFORMIS MUSCLES
AND RELIEF BY MASSAGE OF THESE
MUSCLES

GEORGE H. THIELE, M.D.

KANSAS CITY, MO.

The efficacy of the treatment of coccygodynia is attested by the numerous forms of therapy which have been recommended. Results from rest, physical therapy and sedatives have not been satisfactory. Injections of various solutions into the soft tissues about the coccyx as recommended by Yeomans¹ and Kleckner² have been more encouraging. Too often coccygectomy has resulted only in chagrin for the surgeon and disappointment for the patient. Careful search of the literature appearing since 1859 fails to reveal a concept of coccygodynia which can harmonize the many forms of therapy which have been advised.

In a classic thesis published in 1859, Sir J. Y. Simpson³ called attention to the fact that, when the coccyx or the coccygeal joints had been injured or when the surrounding tissues were the seat of inflammation, any contraction of the muscles attached to the coccyx would excite the characteristic pain of coccygodynia. That statement is as true today as when Simpson made it and it is noteworthy that since his time although he has been quoted by scores of authors, not one has used this fundamental fact as the basis for a study of this crippling symptom.

Simpson did not mention muscle spasm which attracted my attention in 1934 when I first noted its association with coccygodynia. Continued observation since that time has confirmed the presence of tonic spasm of the levator ani and coccygeus muscles in my own twenty-eight cases of coccygodynia and in Wilson's⁴ series of eleven cases, which I have closely followed. Furthermore, it was early noted that a large percentage of patients with coccygodynia complained also of pain in the supragluteal region and/or down the back of the thigh and that in these patients tenderness and tonic spasm of the piriformis muscle were found almost without exception. Freiberg and Vinke,⁵ and Freiberg⁶ have published two excellent papers in which from an orthopedic point of view they discuss the relationship of piriformis spasm to sciatica.

In our thirty-nine cases of coccygodynia the pain was often so severe that a history of pain in the supragluteal region or down the back of the thigh was elicited only on questioning. In our other fourteen cases the complaint was of pain limited to the supragluteal region and/or down the back of the thigh.

CLINICAL MATERIAL

The clinical material used as the basis for this study consists of eighty-seven patients encountered in the practice of nine different proctologists. No patients with acute injury such as fracture or dislocation of the coccyx are included. The series consists of all the patients in these practices who complained of pain in the region of the coccyx in the supragluteal region or down the back of the thigh. For convenience the series is divided into two groups.

Group 1 consists of my own thirty-one cases extending back three years and of Wilson's series of twenty-two cases which began eighteen months ago. Group 2 is composed of the remaining thirty-four cases, which occurred during the past year in the practices of seven other proctologists in various cities of the United States. In the entire series there were thirteen males and seventy-four females. Their ages varied from 19 to 71 years with an average of 43.4 years. The duration of symptoms was from three days to thirty-

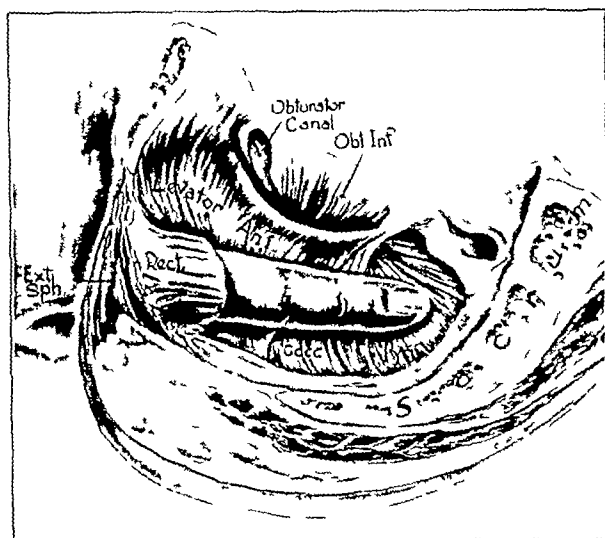


Fig. 1—Sagittal section showing the position of the finger during massage of the levator ani, coccygeus and piriformis muscles. The finger sweeps from side to side massaging lengthwise of the muscle fibers.

two years, with an average of about two years. Nineteen of the eighty-seven patients gave a history of trauma, which included falls, parturition and long automobile rides. The remaining sixty-eight cases may be placed in a large group classified by other writers as idiopathic. Several patients stated that their symptoms were first noted after a rectal operation. Three patients had had coccygectomies without relief. In thirty of the entire series of eighty-seven patients the pain was confined to the region of the coccyx, in seventeen it was confined to the supragluteal region or down the back of the thigh, and in the remaining forty coccygodynia was combined with pain either in the supragluteal region or down the back of the thigh.

CLINICAL HISTORIES

It is interesting to note that some of the patients stated that their pain first began as a sense of weight or heaviness which they at first referred to the rectum. This sensation gradually became more severe, and by

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¹ Yeomans, F. C. Coccygodynia. A New Method of Treatment by Injection of Alcohol. *Tr. Am. Proct. Soc.* 16: 67-75, 1914. Coccygodynia. Further Experience with Injections of Alcohol in Its Treatment. *Surg., Gynec. & Obst.* 29: 612 (Dec.) 1919.

² Kleckner, Martin S. Coccygodynia. The Present Day Interpretation and Treatment. *Tr. Am. Proct. Soc.* 34: 100-107, 1933.

³ Simpson, Sir J. Y. Coccygodynia and Diseases and Deformities of the Coccyx. *M. Times & Gaz.* 40: 1031 (July 2) 1859.

⁴ Wilson, F. I. (Kansas City, Mo.) Personal communication to the author.

⁵ Freiberg, A. H. and Vinke, T. H. Sciatica and the Sacro-Iliac Joint. *J. Bone & Joint Surg.* 16: 126 (Jan.) 1934.

⁶ Freiberg, Albert H. Sciatic Pain and Its Relief by Operation on Muscle and Fascia. *Arch. Surg.* 34: 357 (Feb.) 1937.

⁷ Personal communication to the author by Harry E. Bacon, Philadelphia; E. H. Terrell, Richmond, Va.; Rufus C. Alley, Lexington, Ky.; Harry C. Guess, Buffalo; Malcolm R. Hill, Los Angeles; E. G. Martin, Detroit; and C. C. Meckling, Pittsburgh.

the time the patient sought relief he was complaining of severe aching or cramping pain referred to the region of the coccyx which was more noticeable when he was sitting in a hard chair, particularly when sitting was continued, or during the act of arising or sitting down. Inability to lie comfortably on the back was a frequent complaint, the pain being worse in that position. Lying on the side was preferred by the great majority. Periodic attacks of lancinating breath-taking coccygeal pain superimposed on the severe aching pain were frequent.

The pain down the back of the thigh varied from mild aching to the most severe boring aching pain during the presence of which the patient was unable to place the extremity in a comfortable position. There were frequent complaints of tenderness of the gluteus maximus close to its attachment to the coccyx.

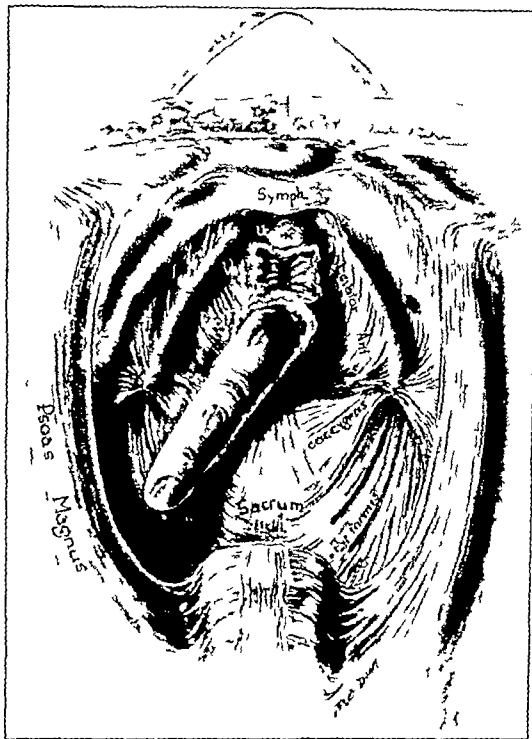


Fig. 2—Anteroposterior view showing the position of the finger during massage of the levator ani, coccygeus and piriformis muscles. Note that only the finger tip reaches the piriformis muscle.

PHYSICAL EXAMINATION

As a class the patients walked somewhat stiffly and sat down cautiously, generally on one buttock and often close to the edge of the chair. On digital rectal examination with the patient in the Sims position spasm of the levator and the coccygeus is easily detected by lateroposterior pressure, the spastic muscles being felt stretched tightly from their origin at the arcus tendineus or ischial spine to the side of the coccyx and lower part of the sacrum. Coccygodynia was found to be accompanied by tonic spasm of the levator ani and/or coccygeus muscle in sixty-four of sixty-nine cases reported by nine different observers. Tenderness of these muscles was found in three of the remaining five cases.

The piriformis muscle is felt with the tip of the finger just distal to the sacrospinous ligament and lateral to the second, third and fourth sacral vertebrae (figs. 1 and 2). It is most easily felt on the right side when the

patient is lying on the left side and vice versa, and with one hand on the buttock one can often palpate bimanually.

Spasm of the piriformis is sometimes very difficult to ascertain with certainty, owing to the fact that the muscle is so far from the anus that its palpation is difficult. Shordania,⁸ in thirty-seven cases of piriformis in women with low backache, identified the muscle by its increasing size during external rotation of the extended thigh on the affected side. One can definitely state that many times the piriformis on the affected side feels firmer and offers more resistance to pressure with the finger than on the unaffected side. Freiberg's sign⁹ of piriformis spasm, as evidenced by limitation of motion in inward rotation of the fully extended thigh, is often positive. All the thirty-three patients with pain in the supragluteal region or down the back of the thigh seen by Wilson and myself had tenderness over the piriformis, and it was our opinion that thirty-one had piriformis spasm. Reports from seven other observers are incomplete in this respect and are therefore not quoted.

Tenderness of this group of muscles is unmistakable when present, the slightest pressure with the finger provoking cries of pain. Tenderness from digital pressure on the coccyx itself is not marked and may even be absent. The tenderness usually described as being present in the coccyx is in reality in the tissues just lateral to the bony structures. Movement of the sacro-coccygeal joint is most often productive of severe pain, but cases have been observed in which, although the joint could be moved painlessly, nevertheless the levator ani and the coccygeus muscles were extremely tender.

Supragluteal tenderness is present over the distribution of the superior gluteal nerve but is much more marked where the nerve emerges from between the piriformis muscle and the lower border of the gluteus medius (fig. 3).

Tenderness of the sciatic nerve is demonstrated in the usual manner by external pressure but is more pronounced when pressure on the nerve is made from within the pelvis.

I am not informed as to the remainder of the series, but, in Wilson's and my fifty-three cases of all types, orthopedic and gynecologic consultation and roentgenographic studies were freely used.

THE MODE OF PRODUCTION OF SYMPTOMS

After spasm was found in this group of muscles, an interpretation of the manner in which such spasm might have produced the symptoms observed seemed desirable. First of all one must remember that muscle spasm itself is very painful, and nothing further need be said to explain the pain in some of our cases of coccygodynia.

A full discussion of some of the mechanisms involved is contained in a former paper⁹ on this subject. Suffice it to say that spasm of both portions of the levator ani exerts forward as well as lateral traction on the coccyx. Unilateral contraction of the coccygeus exerts traction which is more nearly lateral. Thus it may be seen that in the presence of arthritis or trauma of the sacro-coccygeal articulation or the coccyx spasm of either or

⁸ Shordania, J. F. Die chronische Entzündung des Musculus piriformis—die Piriformitis—als eine der Ursachen von Kreuzschmerzen bei Frauen. *Med. Welt* 10: 999 (July) 1936.

⁹ Thiele, George H. Tonic Spasm of the Levator Ani, Coccygeus and Piriformis Muscles. Relation to Coccygodynia. *Tr. Am. Soc. Soc.* 37: 145, 1936.

these muscles would tend to increase the pain. It would seem that in such a case a vicious circle is established, i. e. pain, spasm, more pain and more spasm.

As has been stated, in patients who complained of pain in the supragluteal region and/or down the back of the thigh, the pelvic portion of the piriformis muscle on the affected side was more tender to pressure and its belly firmer to touch than on the unaffected side. This muscle arises from between the first four sacral foramina and also from the grooves leading from the foramina. A few fibers also arise from the anterior surface of the sacrotuberous ligament. If one considers the sacrum as the origin of the piriformis, then some of its lower fibers insert into the inferolateral margin of the great sacrosclatic foramen instead of arising there as stated in numerous textbooks on anatomy. This insertion into the inferolateral margin of the great foramen provides an efficient mechanism whereby contraction of the piriformis may squeeze the sciatic nerve against the lower border of the foramen formed by the sharp edge

of the sciatic nerve, particularly in the presence of a spastic coccygeus muscle and/or a shortened sacrospinous ligament. In a like manner it may also squeeze the superior gluteal nerve by pressure against the lower border of the gluteus medius.

In view of these factual and theoretical considerations it seemed desirable to determine whether or not such spasm of the levator ani, coccygeus and piriformis could be overcome by massaging these muscles with the finger through the rectum. Massage has been used by eight different proctologists in eighty of the eighty-seven cases reported in this study.

TECHNIC OF MASSAGE

Ely¹¹ in 1910 reported on the treatment of coccygodynia by massaging the coccyx and its immediate soft parts between the thumb and forefinger and stated that "usually two or three treatments at intervals of two or three days will suffice to cure." He did not mention muscle spasm nor did he describe massage of the levator ani or coccygeus muscles.

A uniform technic of massage has been used in all cases. With full length insertion of the finger in the rectum, lateroposterior pressure will place its flexor surface horizontally across the surfaces of the levator ani and coccygeus muscles almost at a right angle to their fibers (figs 1 and 2). The fibers of the piriformis are felt immediately beyond the sacrospinous ligament and are touched by the finger tip in such a manner that lateral motion of the finger will stroke lengthwise that portion of the belly of the muscle lying within the pelvis.

These muscles are massaged in the long direction of their fibers in the same manner that a strip is stroked by a razor. Massage is begun lightly. This is necessary because one does not wish to traumatize the extremely tender spastic muscles. The sacrospinous ligament is merely pressed on by the finger in a direction vertical to its long axis. As the patient makes subsequent visits, massage is made with increasing pressure. If a reaction evidenced by increased pain is evoked light massage is again reverted to and pressure is increased as tenderness decreases.

If definite improvement does not result after the first four to six massages over a period of a week or ten days orthopedic or other indicated consultation should be sought.

TABLE 1—Results of the Treatment of Eighty Patients with Spasm of the Pelvic Muscle Productive of Coccygodynia With or Without Pain in the Supragluteal Region and/or in the Thigh

Proctologist	No of Patients	Cured	Improved	Unimproved
	(series 1)			
Thiele	31	19 (61.3%)	11 (35.5%)	1 (3.2%)
Wilson	22	16 (72.7%)	5 (22.7%)	1 (4.6%)
Total	53	35 (66.0%)	16 (30.2%)	2 (3.8%)
	(series 2)			
Bacon	5	2 (40.0%)	3 (60.0%)	1 (20.0%)
Terrell	1	4 (80.0%)	1 (20.0%)	0
Alley	1	2 (40.0%)	3 (60.0%)	0
Grees	4	2 (50.0%)	2 (50.0%)	0
Hill	1	2 (66.6%)	0	1 (33.3%)
Martin	2	1 (50.0%)	0	1 (50.0%)
Total	21	13 (48.1%)	11 (40.7%)	3 (11.1%)
Series 1	53	35	16	2
Series 2	27	13	11	3
Grand total	80	48 (60.0%)	27 (33.7%)	5 (6.2%)

of the sacrospinous ligament and the upper borders of the gemellus superior and coccygeus muscles (fig 3). In recent dissections I have noted that the lower border of the piriformis is somewhat sharp and tendinous in structure. This fact has also been noted by Freiberg¹⁰.

The piriformis passes out of the pelvis through the great sacrosclatic foramen and is inserted by a rounded tendon into the inner side of the upper border of the great trochanter. By its upper border this muscle is in apposition with the gluteus medius, from which it is separated by the gluteal vessels and the superior gluteal nerve (fig 3).

In the dissecting room the sciatic nerve was removed from the great sacrosclatic foramen. The index finger was then inserted into the space which had been occupied by the nerve, and the thigh was forcibly internally rotated while in extension. This maneuver tightened the piriformis and squeezed the finger between the lower border of the muscle above and the sacrospinous ligament forming the lower edge of the foramen below. Having made this observation one could not doubt that spasm of the piriformis could cause pressure on the



Fig 3—Posterior view of the hip showing the piriformis muscle as it emerges from within the pelvis through the great sacrosclatic foramen. Note that the sciatic nerve passes beneath the piriformis muscle whose lower fibers insert into the inferolateral margin of the great foramen. The superior gluteal nerve may be seen passing between the upper border of the piriformis and the lower border of the gluteus medius.

10 Freiberg, Albert H. (Cincinnati). Personal communication to the author.

RESULTS

The patients were given an average of eleven treatments over an average period of eleven weeks by eight different proctologists.

In my own series of thirty-one cases of coccygodynia with or without associated pain in the supragluteal region or down the back of the thigh, in which massage was the only therapeutic measure, nineteen patients (61.3 per cent) were cured, eleven (35.5 per cent) were definitely improved and one (3.2 per cent) was unimproved. Wilson, using the same technic in twenty-two cases, reported sixteen (72.7 per cent) cured, five (22.7 per cent) definitely improved and one (4.5 per cent) unimproved (table 1, group 1).

Mechling reported seven cases of coccygodynia in all of which he found spasm of the levator ani. All his patients were improved but none were cured. He did not use massage but depended on heat, rest, elimination forced fluids and occasional Turkish baths. The notable fact concerning Mechling's series is that he found levator spasm in all his cases.

Six other observers reported twenty-seven additional patients with spasm of the pelvic muscles and with

TABLE 2—Detailed Results in Fifty-Three Cases of Thiele and Wilson

Symptoms or Observations	No. of Cases	Cured	Improved	Unimproved
Pain and tenderness limited to coccygeal area	11	3 (45.5%)	3 (45.5%)	1 (9.0%)
Coccygodynia with or without hip and leg symptoms	39	23 (64.1%)	13 (33.3%)	1 (2.6%)
Pain in the thigh	78	27 (71.0%)	10 (26.3%)	1 (2.6%)
Supragluteal pain	32	23 (71.8%)	9 (28.1%)	0
Coccygeal tenderness	37	23 (62.2%)	12 (31.7%)	2 (6.0%)
Supragluteal tenderness	23	15 (65.2%)	8 (34.8%)	0
Tenderness of thigh	16	9 (56.2%)	7 (43.7%)	0
Tenderness of piriformis	42	28 (66.6%)	13 (31.0%)	1 (2.4%)
Tenderness and spasm of levator ani and coccygeus	44	28 (63.6%)	13 (34.1%)	1 (2.3%)
Spasm of piriformis	39	26 (66.6%)	12 (30.8%)	1 (2.6%)

symptoms similar to those of our group 1. These twenty-seven patients were all treated by massage. Of this group, thirteen (48 per cent) were cured, eleven (41 per cent) were definitely improved and three (11 per cent) were unimproved (table 1, group 2).

Combining the results of all observers, excluding those in Mechling's patients, who were not treated by massage, one finds that forty-eight (60 per cent) were cured, twenty-seven (33.7 per cent) were definitely improved and five (6.3 per cent) were unimproved.

Results of treatment by massage as regards the various symptoms and observations in Wilson's and my fifty-three cases (group 1) are shown in table 2.

SUMMARY AND CONCLUSIONS

Coccygodynia was found to be accompanied by spasm of the levator ani and/or coccygeus muscles in sixty-four of sixty-nine patients seen by nine different observers.

Spasm of the piriformis muscle was found in thirty-one of thirty-three patients with pain in the supragluteal region or down the back of the thigh (Thiele's and Wilson's).

There is a sound anatomic basis for the causation of coccygodynia by spasm of the levator ani and coccygeus muscles and for the production of supragluteal pain and pain down the back of the thigh by spasm of the piriformis muscle.

In the treatment of these complaints by massage of the pelvic muscles involved the technic outlined should be carefully followed.

In a series of eighty patients with coccygodynia or pain in the supragluteal region or down the back of the thigh who were treated by massage by eight different proctologists, 60 per cent were cured, 33.7 per cent were definitely improved and 6.3 per cent were unimproved.

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ABSTRACT OF DISCUSSION

DR FERNANDO I. WILSON, Kansas City, Mo. I am indebted to Dr. Thiele for pointing out that some patients with coccygodynia and pain in the superior gluteal region with or without pain down the thighs may have spasms of such muscles as the levator ani, coccygeus and piriformis muscles or some combination of these three groups and that massage of this group of muscles will relieve pain in these areas. I have treated twenty-two cases by massage as described by Dr. Thiele. In eight of these cases, in addition to massage, an oil soluble anesthetic was injected into the spastic muscles. The latter procedure has now been discontinued not only on account of uncertainty and danger but because it was almost always necessary to continue the massage in order to give complete relief from pain. At the present time, if these patients have no pathologic condition of the anus I instruct them to pass a rectal dilator twice daily. This procedure will relax the sphincter muscles, and often the levator ani muscles will be likewise affected. The relaxation thus produced will render massage much easier and less painful. Considerable experience is necessary in order to estimate properly the amount of spasm present in one or more of this group of muscles or perform the massage properly. One eventually learns however, the proper amount of pressure to apply and also just where this pressure is most needed. Dr. Thiele has pointed out that spasm of muscles is in itself productive of most severe pain. He does not explain, however, the cause of spasm in this group of muscles. I have observed spasms of one or more of these muscles with its resulting pain in four types of cases: 1. Cases which followed an anal operation; 2. Cases in which there was anal disorder (fissure, cryptitis) and no disturbance of the sacro-iliac or lumbosacral joints; 3. Cases in which sacro-iliac or lumbosacral disease was present and no anal disorder; 4. Cases in which anal disease or disease of the lumbosacral or sacro-iliac joints was not present. In cases considered due primarily to anal disorder it is often advisable to relieve the spasm in one or more of this group of muscles under discussion by massage before removing the anal condition. This procedure will decrease postoperative distress and often eliminate high rectal pain which is often wrongly considered due to postoperative proctitis. I believe there are many patients who have pain in the lower abdominal quadrant due to spasm of the piriformis muscle on the affected side. Eight of the twenty-two patients in my series complained of pain in the lower abdominal quadrant. In every instance this pain followed the course of the iliohypogastric and the ilioinguinal nerve and could be exaggerated by pressure on the piriformis muscle near its origin on the affected side. Six of this group of eight cases have been relieved by massage of the piriformis muscle alone. The remaining two cases were cured by a combination of anal operation and massage.

DR EDWARD G. MARTIN, Detroit. I wish Dr. Thiele would elaborate on the technic of massage and particularly as to how long at each treatment also suggest how it is possible for this massage to relieve the symptoms permanently and often with so few treatments. In one of the two case records which I contributed there was a surprising and amusing experience. The man was athletic and played hand ball at the university club. He was referred to me after a urologist had excluded the urologic field as a factor. My examination was negative and with some hesitation I suggested that we might try massage of the piriformis muscle. One treatment was followed by two others at periods of four or five days then he stopped coming. After a month or two I mentioned this to the urologist who had referred him to me and suggested that probably I should not have given him these treatments. His reply was, 'He thinks you are marvelous, and the reason he has not returned is that he was entirely relieved of his pain.'

DR C. H. TERRELL, Richmond, Va. Dr Thiele read a paper along the same lines at the meeting of the American Proctologic Society at Kansas City last year. Since hearing his paper a year ago, I have seen eight patients with symptoms as described by him in whom definite contractions or spasms of the levator ani or of the piriformis muscles were found. In some cases both muscles seemed to be involved. These patients have been completely relieved or decidedly benefited by massage of these spastic muscles. I think Dr Thiele has not stressed enough the rectal pain often associated with spasms of these muscles. Most of my patients had considerable pain in the rectum which seemed to be more or less relieved following bowel movements. Many of them also suffered with low backache and in two women there were in addition complaints of painful sensations in one or both sides of the vagina. An interesting case in this series was that of a man who complained solely of pain in the rectum occurring most frequently in the middle of the night. Often he would be awakened by a sharp constant aching pain in the rectum which sometimes would last for several days. Examination disclosed that he had a decided spasm of the levator ani muscle on the left. Massage of this muscle would give him complete relief for several weeks. There have been a number of recurrences, however, but in each instance relief has been obtained by massage of the muscle.

DR GEORGE HENRY THIELE, Kansas City Mo. Dr Wilson mentioned the cause of pain. I am frank to confess I cannot answer that, but I believe that in the postoperative rectal cases the pain is due to a subconscious effort on the part of the patient to elevate the anus so it will not be hurt by the chair, and that in the subconscious act he probably subconsciously produces a spastic state of the levator ani muscle, which is productive of his pain. I feel sure that this is the proper explanation in one of my cases. Another cause may be rectal disease. I would say that possibly from 40 to 50 per cent of my patients had been operated on previous to the time I saw them, or that I operated on them, having been unable to get permanent relief by massage alone. Shordania of Germany states that piriformitis was found in 20 per cent of 450 cases of pelvic disease in women who complained of lower backache. I have seen several cases in which the pain appeared during pregnancy before the descent of the head into the pelvis, and I believe there must be a reflex there about which nothing is known at present. Dr Martin has asked about the duration of the massage. My cases were treated on an average of eleven times over an average period of eleven weeks. Each massage lasts not to exceed one or two minutes. Treatments are at first given every day or every other day, and the interval is lengthened as relief is obtained. Dr Terrell mentioned the fact that rectal pain with defecation is relieved by massage. I think that this relief can be explained by the fact that during active defecation the muscles relax and then contract to pull the anal canal up into normal position. Massage, by relieving the tonic spasm of the levatores ani, relieves the pain of the act of defecation. Vaginal pain is easily explained on the basis of levator ani spasm. I have seen several such cases. The night pain referred to is caused, I believe, by an acute cramp of the levator ani or coccygeus muscle. Such pain can often be duplicated in the office by making excessive pressure on the spastic muscles, and is stabbing or lancinating in character.

Antivivisection's Weakest Point—Herein it seems to me lies the weakest point in the opposition to experimentation on the basis of cruelty—namely that the animals whose preservation is desirable benefit from these investigations as greatly as man. There is no more notable example of this than the case of man's companion the dog. Through the deserved attachment which has grown out of this companionship a sentiment has arisen which would exempt the canine species from experimentation. But had such a law been put on the statutes, Copeman's discovery of the bacterial cause of distemper, and of a successful method of inoculation against this most fatal and distressing canine disease would have been impossible—Cushing, Harvey. *Consecratio Medici and Other Papers*, Boston Little Brown & Co 1928.

Clinical Notes, Suggestions and New Instruments

GONOCOCCIC SEPTICEMIA WITH PURPURA AND ARTHRITIS SUCCESSFULLY TREATED BY HYPERTHERMIA

ONIS GEORGE HAZEL, M.D. AND WILLIAM BENHAM SNOW, M.D.
NEW YORK

In a study of the literature we do not find a reported case in which gonococcic septicemia was successfully treated by hyperthermia. We feel that the reporting of any new and safe type of therapy in such a serious complication is warranted.

Many cases of gonococcic septicemia have been reported but relatively few have yielded positive blood cultures. The septicemia may be of very short duration and be followed by localization in a joint or joints or in a tendon sheath. The gonococcic septicemia that persists may or may not involve the endocardium. The prognosis of any case presenting endocarditis is not good. Thayer,¹ in an extensive autopsy study of endocarditis, found that 11 per cent of the cases were due to gonococci. Friedberg² has recently reported four cases of gonococcic septicemia that have come under his care. Three patients recovered without heart damage and the fourth suffered severe heart damage. All his patients gave positive blood cultures.

The actual reason why septicemia develops in some cases of gonorrhea and not in others is not well established. Some feel that instrumentation and self treatment are contributing causes. Some workers feel that the virulence of the organism and the resistance of the patient determine whether or not the infection will remain localized or become generalized.

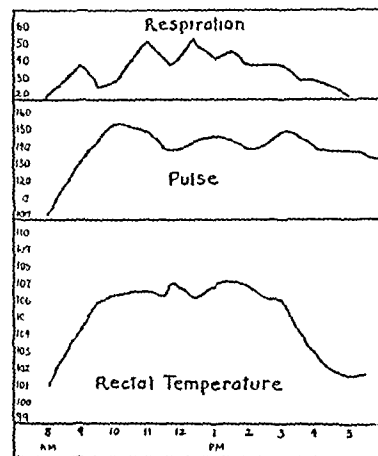


Chart 1—Respiration pulse and temperature curves November 14 during first hyperthermia treatment (five and a half hours above 106 F)

Wheeler and Cornell³ have distinguished two types of gonococcic septicemia that which yields consistently positive and that which intermittently yields positive blood cultures. They feel that patients with endocarditis are more likely to yield consistently positive blood cultures.

The criteria for a diagnosis of gonococcic septicemia rests on the finding of a preexisting focus followed by chills, fever, leukocytosis and constitutional symptoms or by the more direct method of demonstrating the gonococcus in blood cultures. The presence of endocarditis may be evidenced by emboli in the artery of an extremity, in the lungs, brain, liver, spleen or kidney or on the sudden development and alteration of the heart murmurs.

The improved laboratory technic has contributed to the reporting of a larger number of cases of gonococcic septicemia in which there are positive blood cultures. The organism is not easily grown and one or two negative cultures should not be accepted as conclusive evidence against septicemia. Since chills and high fever always accompany this disease it is best to take cultures just before or after the peak temperature.

Read before the first International Conference on Fever Therapy New York March 31 1937

From the Medical Service of the Presbyterian Hospital and the College of Physicians and Surgeons, Columbia University

1 Thayer W S. Cardiac Complications of Gonorrhea. *Bull Johns Hopkins Hosp* 33: 361 (Oct.) 1922

2 Friedberg C K. Gonococcemia with Recovery. *Am J M Sc* 158: 271-278 (Aug.) 1934

3 Wheeler G W and Cornell N W. Gonococcic Bacteremia in a Woman with Apparent Cure by Surgical Intervention. *J A M A* 94: 1568 (May 17) 1930

REPORT OF CASE

History—F C, a Puerto Rican, aged 40, admitted to the Presbyterian Hospital Oct 31, 1936, complained of fever, a skin rash, painful joints and a penile discharge. The discharge had developed five weeks before admission, one week after exposure. The daily temperature before admission had been between 101 and 104 F, with the peak coming in the afternoon. He had treated himself with potassium permanganate for two weeks. The joint pains were of two weeks' duration and the skin rash was of two or three weeks' duration.

Examination—The patient was chronically ill with a temperature of 100.8 F, pulse 110, respiration rate 20, and blood pressure 140 systolic, 92 diastolic. A generalized purpura was present, with the petechia more marked on the palms and soles. The ankles, knees, wrists and left shoulder were painful, but there was very little swelling. The heart showed a gallop rhythm and a soft precordial systolic murmur. The liver was one fingerbreadth below the costal margin and the spleen was two fingerbreadths below the costal margin. There was a slight urethral discharge but no tenderness or enlargement of the prostate.

Laboratory examinations revealed the following: Hemoglobin, 93 per cent, red blood cells, 5,200,000, white blood cells, 22,000, polymorphonuclears, 84 per cent, lymphocytes, 16 per cent, urine, 1 plus albumin, stool, negative. The Wassermann reaction was negative, prostatic and urethral smears were negative for gonococci.

Course and Treatment—Immediate blood cultures were taken and the patient was treated symptomatically for one week, during which time he had a daily temperature of between 100.5 F and 104.4 F. He was given codeine for pain.

One week after admission, the blood culture was reported positive for gram-negative diplococci, which were not agglutinated by meningitis serum. Since the purpura was of the

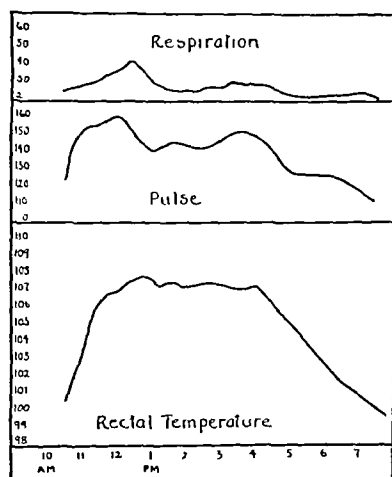


Chart 2—Respiration pulse and temperature curves November 23 during second hyperthermia treatment (five hours above 106 F)

type often seen with epidemic cerebrospinal meningitis, the medical service felt that antimeningococcus serum was indicated. He was given 30 cc intravenously without any change in his condition after seventy-two hours. Ten days after admission another culture was reported positive for gonococci. The organism gave all the fermentation tests for gonococci. Later, two more cultures were reported positive. November 14, fifteen days after admission, he was given five and one-half hours of hyperthermia, with a rectal temperature of from 106 F to 107.4 F. The hyperthermia was induced in a cabinet in which the heat transfer was made by using a fine vapor of warm water sprayed on the patient through atomizers at 50 pounds pressure. He was exhausted after the treatment and was given intravenous dextrose in saline solution. He felt that the treatment was so exhausting that he could not stand another. On the day following the treatment he had a chill and a temperature elevation to 105.6 F. The purpura had almost faded by this time and the joints felt less painful. A blood culture taken on the day after the first hyperthermia treatment was positive. During the next week he was very weak, and the temperature continued to be high except on alternate days, when it would not exceed 101 F. November 23 he was given a second hyperthermia treatment for five hours between 106 F and 107.8 F. He tolerated the treatment unusually well and said that he felt that he had been cured. The temperature returned to normal that evening and remained normal throughout the remainder of his hospital stay. The joint pain disappeared except for slight

pain in the left shoulder posteriorly and in the left arm, which has persisted. On the first day after his second treatment gonococci were found in the prostatic smears for the first time but when he was examined in the outpatient department three weeks later no organisms could be found in the prostatic smears.

SUMMARY

A case of gonococcal septicemia with purpura, arthritis and positive blood cultures was successfully treated by hyperthermia. 180 Fort Washington Avenue.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE OF CALCIUM AND THE CHOICE OF A CALCIUM SALT

JOSEPH C AUB, M D

BOSTON

This is one of a series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U S Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION—ED

PHYSIOLOGIC FACTORS

In order to understand the proper use of calcium in medication, it is essential to appreciate the exchange of calcium in the normal body. Most of the inorganic constituents of the body are not stored except in soft tissues but calcium is stored in vast quantities also in the bones. Bones may be divided physiologically into two parts: the cortex, which is essential for posture, which apparently metabolizes at a fairly constant level, and the fine bone trabeculae, which represent an available storehouse for retention or liberation of calcium salts.¹ In the field of inorganic salt metabolism this store is analogous to the retention of fat as a source of readily available calories. The exchange of calcium, therefore, is an open system with a large reserve reservoir. After absorption from the intestine, calcium may be promptly excreted or may be deposited, and excreted calcium may come from food or from this reservoir in the bones. Thus, in starvation or in simple calcium starvation the excretion is maintained at a relatively high level, which gradually depletes the bones. Partly as the result of this reserve, the calcium and phosphorus levels in the blood stream remain fairly constant in health and in most diseases, so that their routine determination but rarely gives an index of abnormality of calcium exchange.

There are several factors that influence the stream of calcium in the body.

Factors That Do Not Affect Normal Blood Levels—

1 With a diet inadequate in either calcium or phosphorus, a body storehouse of calcium would be gradually depleted, and this effect would be accentuated if the diet were one with an acid ash, for calcium is one of the lesser important mechanisms by which excess acids are neutralized in the body.

2 Excessive amounts of both thyroid and anterior pituitary secretion stimulate the calcium excretion to

¹ Bauer, Walter, Aub, J. C. and Albright, Fuller. *Studies of Calcium and Phosphorus Metabolism. V. A Study of the Bone Trabeculae as a Readily Available Reserve Supply of Calcium.* J. Exper. Med. 19: 145-161 (Jan.) 1929.

abnormally high levels. This is particularly true of thyroid extract and, in exophthalmic goiter, the calcium drain is far greater than even in hyperparathyroidism, in spite of the fact that normal blood levels are maintained. In hypothyroidism, the calcium excretion is below normal. With regard to tumors of the anterior pituitary gland, the calcium excretion is high in the urine in both acidophilic tumors and basophilic tumors. In all these conditions, marked osteoporosis and even pathologic fractures may occur.

Factors That May Affect Blood Levels—1 The secretion of the parathyroid glands has no influence on calcium absorption from the intestine but markedly influences the calcium and phosphorus levels in the blood stream. Deficient secretion is associated with a lower blood calcium and an elevated blood phosphorus and a diminished excretion of both in the urine. Because of this change in blood levels, tetany results. Excessive secretion raises the blood calcium, lowers the blood phosphorus and is associated with increased excretion of both of these in the urine. Much of this excretion may be derived from the bones unless very large amounts of calcium and phosphates are ingested. Because of the excessive urinary excretion, renal stones are apt to be produced.²

2 Vitamin D also influences the calcium stream. In therapeutic doses it may greatly facilitate absorption of calcium from the intestine and also the deposit of calcium phosphate in the bones. In excessive doses its action practically mimics that of parathyroid extract on the blood and excretion levels. In vitamin D deficiencies one gets the picture of infantile or adult rickets with its normal blood calcium and lowered blood phosphorus, and also the characteristic picture of rickets in the bones. According to Reed,³ calcium excretion may be increased without abnormal blood levels as a result of very large doses of vitamin D.

3 Vitamin C (cevitamic acid) also is a factor in calcium deposit in the bones, for its addition to a scorbutus-producing diet causes a rapid deposit of calcium at the epiphyseal ends of bones and in trabeculae.⁴

4 Steatorrhea, or Gee's disease, prevents the absorption of calcium because insoluble calcium soaps are formed in the intestine. As a result, osteomalacia may follow and become so marked that a low blood calcium may accompany the reduced blood phosphorus, with resulting tetany.⁵

5 Any tumor that has multiple metastases in bone may apparently cause an elevation of blood calcium with a normal blood phosphorus level. Multiple myelomas with their associated high total blood protein are apt to do this, but so are metastatic breast tumors and hypernephromas.

6 Severe chronic nephritis may also cause abnormalities in the blood with a low blood calcium and protein and a high blood phosphorus level.

TREATMENT OF CALCIUM ABNORMALITIES

It is obvious from the foregoing paragraphs that the use of calcium in therapy must be based primarily on a knowledge of the abnormality involved in this complicated metabolism. Blood analyses help considerably in this differential diagnosis. A prerequisite for successful therapy naturally rests in the correction of the fundamental abnormality.

Treatment to Increase Calcium Stores in the Bones—Whenever confronted with depletion of the calcium stores in bones, no matter what the cause, one should attempt to increase these stores by increased ingestion of calcium. This is best accomplished by the drinking of large quantities of milk, as the calcium in this food is readily absorbable. Roughly, a quart of milk contains a gram of calcium. If however, milk cannot be tolerated, other salts may be resorted to. Both calcium gluconate and calcium lactate are far more palatable and probably as readily absorbed as the salts of inorganic acids. However, because of the large molecules it requires 11.2 Gm of calcium gluconate and 7.7 Gm of calcium lactate to include 1 Gm of calcium. Under normal conditions from 0.5 to 1 Gm of calcium a day is certainly adequate for any person and 2 Gm of calcium will be considered a high daily intake. Whenever absorption of large quantities of calcium is desired, it is important that adequate intake of vitamin D also be maintained, as this facilitates the calcium absorption through the intestine.

Infantile rickets and adult osteomalacia may also be due to a deficient calcium intake, though the primary factor in this disease is usually a deficiency of vitamin D. It has recently been shown by Shohl⁶ that deficiency in either calcium or phosphate intake may also produce the characteristic picture of the disease. In childhood such a deficiency is usually in the phosphate ion, but in adults the phosphate intake is usually adequate, whereas the calcium intake may be deficient. In the treatment of this disease, therefore, the food deficiencies ought to be corrected and an adequate dose of vitamin D given. In severe cases a deposit of calcium phosphate in the bones may then be so rapid that tetany may supervene, and under these conditions the rapid administration of adequate calcium and phosphate is an essential part of therapy.

Treatment to Lower an Abnormally High Blood Calcium—When this is due to adenoma or hypertrophy, surgical removal of the excess parathyroid tissue should be resorted to. Postoperatively, one may then encounter tetany, which needs serious treatment. When it is due to excessive intake of vitamin D, one can only wait for the effect to wear off—which is a matter of several weeks. When it is due to metastatic neoplasm of the bones, irradiation is about all that is available.

Methods to Elevate a Low Blood Calcium—Methods to raise the blood calcium level and to increase calcium storage are essentially the same though therapy is pushed when the blood calcium must be raised. In severe tetany due to low blood calcium there may be very severe spasm of both striated and smooth muscle. To elevate the blood levels the need for calcium therapy may be so great that its intravenous use is essential as a life-saving measure. Under these conditions two salts of calcium may be utilized. Sterile calcium chloride may be given

² Albright, Fuller, Baird, P. C. Cope, Oliver and Bloomberg. *Studies of the Physiology of the Parathyroid Gland. IV. Renal Complications of Hyperparathyroidism.* *Am J M Sc* 187: 49 (Jan.) 1934.

³ Reed, C. I. *Symptoms of Viosterol Overdose in Human Subjects.* *J A M A* 102: 1745 (May 26) 1934.

⁴ Saller, W. T. and Aub, J. C. *Studies of Calcium and Phosphorus Metabolism. IX. Calcium Deposition in Bone in Healing Scorbutus.* *Arch Path* 11: 380 (March) 1931. Volbach, S. B. and Howe, F. R. *Intercellular Substances in Experimental Scorbutus.* *Arch Path* 1: 1 (Jan.) 1926.

⁵ Aub, J. C., Albright, Fuller, Bauer, Walter and Rossmersl. *Studies of Calcium and Phosphorus Metabolism. VI. In Hypoparathyroidism and Chronic Steatorrhea with Tetany with Special Consideration of the Therapeutic Effect of Thyroid J.* *Clin Investigation* 11: 211 (Jan.) 1932. Bennett, T. J., Hunter, Donald and Vaughan, Janet M. *Idiopathic Steatorrhea (Gee's Disease). A Nutritional Disturbance Associated with Tetany, Osteomalacia and Anemia.* *Quart J Med* 1: 603-677 (Oct.) 1932.

⁶ Shohl, Rickets in Rats. *VI. The Effect of Low Calcium High Phosphorus Diets at Various Levels and Ratios upon the Production of Rickets and Tetany.* *J Nutrition* 11: 275 (March) 1936.

⁷ Churchill, E. D. and Cope, Oliver. *The Surgical Treatment of Hyperparathyroidism Based on Thirty Cases Confirmed by Operation.* *Ann Surg* 104: 9 (July) 1936.

intravenously in doses of 10 cc of a 5 per cent solution. It has several disadvantages, for occasionally thrombosis of the vein may follow its use, and if any of it is injected in the extravascular spaces a slough is apt to result and great pain is always experienced. Calcium gluconate, therefore, is a preferable preparation because it may be given without these disadvantages and may, indeed, be given intramuscularly. In doses of 10 cc of a 20 per cent solution it produces the characteristic calcium effect—a feeling of great heat suffusing the whole body, particularly noticeable in the mouth. The patient may also vomit. When these symptoms are obtained, administration of calcium intravenously ought to be stopped. Whenever a soluble calcium compound is given intravenously, the injection should always be made very slowly, preferably over a period of about five minutes, in order to obviate any possible effect on the heart. Such an injection should eliminate the signs of low calcium tetany. By the time an injection is over, there develops a dramatic relaxation of the intensive muscle spasm. This effect may last for as long as two hours. In the meantime a similar amount of solution of calcium gluconate may be injected intramuscularly, in order to prolong the effect. As injections of parathyroid extract have a latent period of four hours before exerting an influence on the blood calcium, this type of calcium gluconate injection may tide over a crucial period in the disease.

Calcium gluconate is of value also in other spasms of smooth muscle. Its effect is best observed in acute lead colic, in which morphine and other sedatives are not very efficient. An intravenous injection of solution of calcium gluconate or chloride will usually cause a prompt cessation of this pain, sometimes permanently, at other times for several hours. If it is necessary, a second similar intravenous injection may be given in two hours and probably in somewhat less time without deleterious effects. Intravenous administration of calcium compounds is of value also in the treatment of acute gallstone colic and renal colic, but it is to be expected that because of the mechanical obstruction in these conditions its effects will not be so dramatic as in lead colic.

Intramuscular Use of Calcium—The intramuscular use of the calcium salt appears to be indicated only in order to prolong the effects of intravenous therapy or for more rapid absorption than can be obtained through the gastro-intestinal tract. Calcium gluconate may be given in the same dosage as for intravenous therapy, but calcium chloride and similar compounds should never be so used because of their necrosing effect on the tissues.

Calcium by Mouth—The use of calcium compounds by mouth is naturally limited to more chronic conditions in which there is no urgency with regard to calcium absorption. Calcium when so given has but little influence on the normal blood calcium level, raising it in my experience not more than 1 mg., and that only temporarily. In patients with a low blood calcium, however, large amounts of calcium compound should be ingested for this increases the calcium stream in the body and has a more intense and prolonged effect on the blood level than in normal individuals. A high calcium diet can easily be obtained by means of milk, eggs and green vegetables. If calcium salts need to be added, they are most easily taken as chalk (calcium carbonate) or calcium gluconate or lactate. From 10 to 15 Gm a day may be given. Adequate doses of vitamin D should always be given to facilitate the absorption of calcium through the intestinal mucosa.

The Importance of Phosphates—Though this discussion is largely limited to calcium therapy, it must always be remembered that the metabolism of the calcium and phosphate ions is intimately interrelated. When the deficiency is dependent on inadequate phosphate, as sometimes occurs in childhood, an increased intake must be instituted. In adult life, with the heavy ingestion of meats, phosphate ingestion is usually adequate, but if this is not the case the deficiency should be corrected.

Parathyroid Extract and Vitamin D—These two drugs are aids in the control of calcium metabolism which should never be overlooked. The action of parathyroid extract was recently summarized in *The Journal* and therefore is not again discussed.⁸

Cod Liver Oil—The effects of overdosage of vitamin D also were discussed.⁹ In physiologic or pharmacologic doses, however, vitamin D is of great value in the absorption of calcium phosphate and in its deposit in the bones of growing children. It may be given in the usual pharmacologic doses, therefore, as *cod liver oil* or as *viosterol* in oil.

When viosterol in oil is used to raise the blood calcium, large amounts must be used (i.e., about 200,000 to 300,000 international units daily). Such large doses will gradually raise the blood calcium level. Regulation of the dose must be controlled by repeated blood calcium determinations, and levels above normal must be avoided as the elevated blood level remains for several weeks after viosterol is stopped. If toxic levels are reached, the anorexia, vomiting and languor are prolonged for about two weeks. The desirable level to maintain is a low normal blood calcium value of from 9 to 10 mg. per hundred cubic centimeters.

A satisfactory substitute for viosterol in oil is to be found in the fraction called dihydrotachysterol.

Vitamin C—As a deficiency of vitamin C has a marked effect on the deposition of bone, any difficulty with bone deposit should always be treated with an adequate vitamin C intake.

Thyroid—Thyroid is an excellent substance for increasing the rate of exchange of calcium salts. Certainly in hyperthyroidism there is a more rapid excretion of calcium than in any other known condition. This excretion is more nearly parallel to the extremely rapid circulation rate than it is to the basal metabolic rate, and it may be four or five times the normal amount. Thyroid, therefore, may be of considerable value in the treatment of tetany as well as in the treatment of ununited fractures, very likely because of its stimulating effect on the calcium metabolism of bone. This therapeutic effect in tetany described by Aub, Albright, Bauer and Rossmeisl¹⁰ has been denied by Freyberg, Grant and Robb¹¹ but reaffirmed by Cope and Donaldson.¹²

Other Uses for Calcium—There are conditions other than those already mentioned in which a high calcium intake is desirable. During pregnancy there is a large storing of calcium in the bones which is later utilized during the period of lactation.¹³ During lactation a positive calcium balance is usually not maintained, so that it is important to develop adequate calcium stores during the period of gestation, particularly the latter

⁸ Aub, J. C. Parathyroid Hormone Therapy. *J. A. M. A.* 107: 191 (July 20) 1935. Chapter XXV in *Clandular Physiology and Therapy*. Chicago: American Medical Association 1935. Reed.

⁹ Freyberg, R. H., Grant, R. I., and Robb, M. A. Hypoparathyroidism. *J. A. M. A.* 107: 1769-1775 (Nov. 20) 1936.

¹⁰ Cope, Oliver, and Donaldson, G. A. Relation of Thyroid and Parathyroid Glands to Calcium and Phosphorus Metabolism. *J. Clin. Investigation* 16: 329-342 (May) 1937.

¹¹ Schmidt, C. L. A., and Greenberg, D. M. Occurrence, Transport and Regulation of Calcium, Magnesium and Phosphorus in the Animal Organism. *Physiol. Rev.* 15: 297 (July) 1935.

half At this time it is desirable that a daily intake of 2 Gm of calcium be maintained It is highly likely that this plus viosterol would largely reduce the incidence of dental caries during the period of lactation¹¹ In childhood, during the growth both of the teeth and of the bones, a similar high calcium intake is needed and a daily ingestion of a quart of milk is then indicated¹²

The observations of Ann Minot indicate that a high calcium intake during acute liver damage is also of great therapeutic value as, in her observation, calcium was a life-saving measure in the liver damage that followed carbon tetrachloride poisoning in animals In this condition it is desirable to have the high concentration in the liver itself, and therefore giving it by mouth is indicated In severe conditions, however, when solution of dextrose is being given intravenously calcium gluconate can also be added to the intravenous therapy

As an Antacid—In the previous considerations, calcium has been given for the purpose of increasing the calcium stores in the body, but calcium may be used as an antacid¹³ by the giving of powdered calcium carbonate (up to 2 Gm) Because calcium is not absorbed as well as sodium in the gastro-intestinal tract and because of its ready deposit in bones, its use in large amounts is less apt to produce an alkalosis Its neutralizing effect with hydrochloric acid is analogous to that of sodium bicarbonate and the two salts are often given together for gastric ulcers A certain amount of this calcium is excreted by the kidneys, and when it is taken in conjunction with sodium bicarbonate, which is usually the case in ulcer therapy, this excessive calcium may be excreted in alkaline urine Under these conditions, in concentrated urine, calcium stones may be deposited in the urinary tract, and this complication should always be borne in mind as a possible sequel of its prolonged use as an antacid

When one wishes to produce an acidosis by means of chloride ions, as, for instance, preceding the use of one of the mercurial diuretics, calcium chloride may be used, because the chloride ion is much more readily absorbed than is the calcium ion¹⁴ As a result, calcium chloride will produce an acidosis, much like ingestion of large quantities of hydrochloric acid, but this reaction can be more readily obtained by the use of ammonium chloride, which is therefore now largely used for this purpose

Calcium has been used in the form of lime water to produce softer milk curds in feeding infants This has largely been discontinued because it necessitates using large amounts of lime water and because boiling and evaporation of milk accomplish a similar effect

There are other conditions in which calcium has been employed in which the physiologic indication is less clear but in which practical experience has indicated benefit Many dermatologists feel convinced that a high calcium intake is of benefit in eczema and similar diseases, though the physiologic reason for this is not clear When milk cannot be tolerated in these cases calcium gluconate or lactate by mouth may be tried as a therapeutic agent A similar situation exists in the treatment of allergic diseases

12 Mellanby M. Diet and the Teeth. An Experimental Study. Part III. The Effect of Diet on Dental Structure and Disease in Man. Special Report Series No. 191. Medical Research Council London His Majesty's Stationery Office 1934

13 Friedenwald Julius and Morrison Samuel. The Pharmacopoeia and the Physician. Use of Gastric Antacids. J. A. M. A. 108: 879 (March 13) 1937

14 Gamble J. L., Blackfan K. D. and Hamilton B. A Study of the Diuretic Action of Acid Producing Salts. J. Clin. Investigation 1: 359 (April) 1925

CONCLUSION

The use of calcium, therefore, in clinical medicine should usually be done in conjunction with the internal secretions and vitamins which influence its metabolism in the body Abnormalities of calcium metabolism are so often related to these accessories of calcium metabolism that no adequate therapy can be given without their adjustment and regulation

695 Huntington Avenue

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

PROPADRINE HYDROCHLORIDE—dl-phenyl-1-amino 2-propanol-1-hydrochloride—a hydro- α - β amino-propylbenzene hydrochloride— $C_6H_5CHOHCHNHCH_2HCl$ Propadrine hydrochloride is the monohydrochloride of a base resembling ephedrine (laevo- α -hydro- α - β -methyl-amino-propylbenzene) but differs in that the methyl group on the amino group is replaced by a hydrogen atom

Actions and Uses—Propadrine hydrochloride acts similarly to ephedrine When applied locally, in the form of a 1 per cent aqueous solution or 0.66 per cent jelly, it produces constriction of the capillaries, thereby shrinking the swollen mucous membranes It is said that its action is somewhat more prolonged than that of ephedrine It is also claimed that the anxiety complex is not so apt to ensue with propadrine hydrochloride as with ephedrine

Dosage—As a spray or instillation, 1 per cent aqueous solution or application of 0.66 per cent jelly locally, orally, as three-eighths grain capsule every two to four hours as indicated Although no toxic effects have been noted, continued overdosage should be avoided as with other vasoconstrictors

Propadrine hydrochloride occurs as a white crystalline powder possessing an odor resembling that of benzoic acid It is freely soluble in water and alcohol insoluble in ether chloroform and benzene Its aqueous solution is neutral to litmus Propadrine hydrochloride melts at 190-194 C

Dissolve about 0.5 Gm of propadrine hydrochloride in 25 cc of water and add 5 cc of a saturated solution of sodium carbonate. Cool in an ice bath and collect the resultant needle-shaped crystals on filter paper wash and dry at 80 C the melting point of the α -hydro- α - β amino-propylbenzene is 101-101.5 C

Dissolve 0.05 Gm of propadrine hydrochloride in 100 cc of water separate portions of 2 cc yield a yellow color with 5 drops of a 9 per cent ferric chloride solution (distinction from *cobefrin* *kephrine* *ephedrine*) no precipitate with potassium mercuric iodide solution (Mayer reagent) (distinction from *benzadrine*) To about 0.1 Gm of propadrine hydrochloride in 5 cc of water, add 1 cc of diluted hydrochloric acid and 1 cc of barium chloride solution no turbidity develops (sulfate)

Dry about 0.3 Gm of propadrine hydrochloride accurately weighed to constant weight at 100 C the loss in weight does not exceed 1 per cent Incinerate about 0.3 Gm of propadrine hydrochloride, accurately weighed the residue does not exceed 0.3 per cent Transfer about 0.2 Gm of propadrine hydrochloride accurately weighed to a 500 cc kjeldahl flask and determine the nitrogen content according to the method described in Methods of Analysis of the Association of Official Agricultural Chemists fourth edition page 23 art 19 the amount of nitrogen is not less than 7.34 per cent nor more than 7.52 per cent when calculated to the dried substance Transfer about 0.2 Gm of propadrine hydrochloride accurately weighed to a 400 cc beaker and determine the chloride content according to the method as described in Methods of Analysis fourth edition page 131 art 35 the amount of chloride found corresponds to not less than 18.85 per cent nor more than 19.95 per cent when calculated to the dried substance

Propadrin Hydrochloride-Sharp & Dohme—A brand of propadrine hydrochloride-N N R

Manufactured by Sharp & Dohme Inc Philadelphia and Baltimore U S patent 1989 093 (Jan 29 1935 expires 1952) Propadrine is a U S registered trademark but the firm disclaims any proprietary rights to the name

Propadrin Hydrochloride Capsules $\frac{3}{8}$ grain (0.074 Gm)

Propadrin Hydrochloride Nasal Jelly 0.66% Marketed in one-half ounce nasal tip collapsible tubes containing 0.66 per cent propadrine hydrochloride with sodium chloride menthol thymol and oil of lavender in a water soluble base chlorbutanol 0.5 per cent is added as preservative

Propadrin Hydrochloride Solution 1% An aqueous solution containing 1 per cent propadrine hydrochloride and 0.5 per cent chlorbutanol as preservative

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 16, 1937

THE AMERICAN FOUNDATION PROPOSALS FOR MEDICAL CARE

When the American Foundation Studies in Government obtained and published the views of numerous physicians concerning the present status and the future of medical practice, it was generally understood that conclusions would not be drawn and that a working program would not be proposed. The evidence was to be set forth with perhaps an analysis. Nevertheless, at the time of publication some earnest workers in the vineyard expressed the belief that certain deficiencies in the medical scheme were clearly apparent and that concrete proposals should be made which would have the approval of the medical profession and which might lead to governmental action. A conference was held in New York City. Later, as reported in the press, some of those present in the conference met with Mrs. Roosevelt and thereafter with the President of the United States. Still later a resolution from the House of Delegates of the New York State Medical Society, obviously a slightly modified form of the American Foundation proposals, was introduced in the House of Delegates of the American Medical Association at Atlantic City and there rejected with an enthusiastic unanimity which indicated quite clearly the utter dissatisfaction of the medical profession with these proposals. The proposals coming from the first conference (not the New York resolution) follow:

PRINCIPLES

- 1 That the health of the people is a direct concern of the government
- 2 That a national public health policy directed toward all groups of the population should be formulated
- 3 That the problem of economic need and the problem of providing adequate medical care are not identical and may require different approaches for their solution
- 4 That in the provision of adequate medical care for the population four agencies are concerned: voluntary agencies, local, state and federal governments

PROPOSALS

- 1 That the first necessary step toward the realization of the above principles is to minimize the risk of illness by prevention

2 That an immediate problem is provision of adequate medical care for the medically indigent, the cost to be met from public funds (local and/or state and/or federal)

3 That public funds should be made available for the support of medical education and for studies, investigations and procedures for raising the standards of medical practice. If this is not provided for, the provision of adequate medical care may prove impossible

4 That public funds should be available for medical research as essential for high standards of practice in both preventive and curative medicine

5 That public funds should be made available to hospitals that render service to the medically indigent and for laboratory and diagnostic and consultative services

6 That in allocation of public funds existing private institutions should be utilized to the largest possible extent and that they may receive support so long as their service is in consonance with the above principles

7 That public health services, federal, state and local, should be extended by evolutionary process

8 That the investigation and planning of the measures proposed and their ultimate direction should be assigned to experts

9 That the adequate administration and supervision of the health functions of the government, as implied in the above proposals, necessitates in our opinion a functional consolidation of all federal health and medical activities, preferably under a separate department

Since the annual session in Atlantic City in June, some of the members of the inner group, notably Dr. Hugh Cabot of Rochester, Minn., and Dr. Robert B. Osgood of Boston, have been circulating these principles among selected members of the American Medical Association with a view to obtaining their indorsement. Thus Dr. Hugh Cabot wrote to one physician in August:

Dear Doctor

A few of us who were included in the Executive Committee of the American Foundation for Studies in Government, whose Report has just appeared, are hopeful that certain basic opinions can properly be put forward based upon the weight of evidence in the Report. I think it important that a considerable group of influential and well-known physicians should assent to certain fairly general propositions, the tendency of which will be to show that what is needed is a very broad attack along a wide front rather than more narrow attacks upon limited objectives. There has, we think, been a good deal of rather just criticism of the medical profession on account of its unwillingness to advise positive rather than negative action. There seems to be some evidence that legislation looking toward compulsory health insurance has attracted a good deal of favorable attention in political bodies. It seems to us that compulsory insurance attacks only a very limited portion of the problem and that legislation to put this into operation might well do serious harm not because it would not be of assistance in solving certain problems but rather because it would help and might, therefore, tend to stop progress along a broader line.

Will you read over the enclosed statement of the Principles and Proposals and after due consideration, if you feel willing to approve, sign and return to me.

Sincerely yours
HUGH CABOT

Moreover, information comes to the effect that Dr. Robert B. Osgood at a recent meeting of the American Orthopedic Association requested many of those in attendance to sign these proposals and some did sign, one actually under the impression that these proposals represented an activity of the American Medical Association. Some orthopedic surgeons who signed have expressed indignation at the manner in which their

signatures were secured and have expressed now their opposition to governmental subsidy and control of medical practice

It should not be necessary to point out again in *THE JOURNAL* the danger of federal subsidies for medical schools and the hazard of turning over to the federal government the control and standardization of medical schools. Such subsidies may easily involve determination of the curriculum and administration of service through the medical schools which would quite certainly interfere with the advancement of medical education and medical science and put the government right into the practice of medicine. Already, in some foreign countries, the government controls the number of medical students and the nature of medical education. American medicine wants no such system. Our government has already voted \$750,000 a year for the control of cancer and suggestions have been offered that similar appropriations be made for the study of infantile paralysis, syphilis and other diseases. The danger of putting the government in the dominant position in relation to medical research is apparent.

Still more serious is the fifth proposal, to the effect that the government subsidize private hospitals in relationship to their laboratory, diagnostic and consultative services. The nonprofit voluntary hospital is the pride of American philanthropy and a major factor in maintaining a high quality of medical service. The tender of governmental funds to such institutions for the care of an ill defined group called the medically indigent appeals to the unthinking physicians who have endorsed these principles and proposals. Yet such an arrangement would put the hospitals promptly into the practice of medicine.

In a list of those who have already signed, submitted by the proponents with their request for additional signatures, there are now some 450 names. Space is not available nor does it seem desirable at this time to publish in *THE JOURNAL* the complete list of those who have signed. A cursory analysis of the list actually reveals the names of some physicians whose names are associated at the same time with views and actions opposed to those which they are here said to hold. Obviously some of these men must have signed merely after seeing the names of those who signed previously and because it looked like a "good" list. There appear also the names of some members of the House of Delegates which voted against some of the very propositions which these members here support. Most conspicuous on the list are the names of those deans and heads of departments in medical schools who may have signed because they saw a possibility of getting government money for clinics and dispensaries.

Such careless participation in propaganda as has here occurred is lamentable, to say the least. Certainly the unthinking endorsers of the American Foundation's principles and proposals owe to the medical profession some prompt disclaimers.

FACTORS INFLUENCING THE RETENTION OF IRON

The importance of an adequate supply of iron in the diet of man is well known. However, the total amount of iron in ingested foods is not the sole factor¹ in determining the amount of this element which is utilized by the organism. Of equal importance are the chemical nature of the compounds in which food iron is contained and variations in the absorption and retention of the substance under different physiologic and pathologic conditions. Prolonged diarrhea, for example, may lower the amount of iron absorbed and therefore the amount retained, presumably because of a decrease in the time during which the chyme is present in the intestine. The amount of hydrochloric acid present in the gastric juice likewise affects the absorption of iron. Patients with achlorhydria frequently have anemia of the iron-deficiency type. Indeed, it has been shown² that the decrease in gastric acidity following alkali therapy in cases of gastric ulcer may frequently be associated with an anemia amenable to therapy with iron.

Recently³ the influence of gastric acidity on the absorption and retention of iron has been studied by the "balance method" in patients with achlorhydria. They were fed an ordinary mixed diet supplying from 10 to 12 mg of iron daily. Patients with normal or only slightly low gastric acidity served as controls. Some of the latter were anemic. The results obtained showed convincingly that, as might be expected, patients with achlorhydria retained much less iron than did those with normal gastric acidity. Indeed, on the average, the achlorhydric patients excreted 4.4 mg of iron more than was ingested daily in the food, whereas those with normal gastric acidity excreted slightly less iron than that consumed in the food. The poorer retention of iron in the patients of the former group was undoubtedly correlated with the lack of hydrochloric acid in the gastric juice. These data also bring out clearly the fact that amounts of iron less than 12 mg daily are undoubtedly not sufficient to maintain a patient with achlorhydria in a state of iron equilibrium such as is the case with normal subjects.

It might be expected that the oral administration of hydrochloric acid to patients with achlorhydria might increase the absorption and retention of food iron. In further studies by the Iowa investigators, 200 cc of tenth normal hydrochloric acid was given three times daily with meals, no significant effect on the retention of iron was observed. These results appear to indicate that hydrochloric acid therapy in cases of achlorhydria is of little or no value as far as the absorption and utilization of food iron is concerned. The procedure of choice appears to be the administration of iron in the

¹ The Iron Requirement of Man editorial J A M A 105 1917 (Dec 7) 1935

² Hypochromic Anemia and Alkali Therapy in Peptic Ulcer editorial J A M A 107 1391 (Oct 24) 1936

³ Barer Adelaide P and Fowler W M Influence of Gastric Acidity and Degree of Anemia on Iron Retention Arch Int Med 50 785 (May) 1937

form of one of its salts. Indeed, the investigators found that large amounts of iron, as iron ammonium citrate were absorbed and retained as well by patients with achlorhydria as by those whose gastric acidity was normal.

THE MISREPRESENTATIONS OF WILLIAM BRADY

In the education of the public about health and disease, Americans today have the benefit of advice from a considerable number of syndicated writers. No doubt the most widely circulated columns are those of Drs. James W. Barton, William Brady, Logan Clendenning, Royal S. Copeland, Irving Cutler, Morris Fishbein and Iago Galdston. Other columns with lesser circulation are written by Drs. Herman N. Bundesen, C. N. Chismen and J. J. Games, there are a half dozen more written by laymen and nurses, including a few dealing wholly with psychiatry. These columns vary in their instructive value and in their accuracy, as might well be expected. Most of them are quite certainly useful, particularly in causing patients to recognize promptly the serious character of some symptoms and to seek adequate medical advice. The column written by Dr. William Brady, once conspicuous because of its educational efforts, has during recent years gradually departed from anything resembling accuracy or established medical science. It seems to strive constantly for sensational effects. Hardly a week passes without a number of letters from people who have been confused by its pronouncements, requesting the facts, or from members of the medical profession protesting bitterly against its malevolent insinuations regarding the medical profession.

On September 20, a column by William Brady appeared in the Pontiac (Mich.) *Daily Press*, with the title "The New One-Shot Insulin." Shortly thereafter a prominent citizen of that city sent the column to the editor of a leading publication, with this statement:

If this is the truth, the medical profession, its universities and its ethical sponsors rate well down with Marijuana pedlers and below. If even part of his inferences should be true there is a vast overturning to be done here in the interest of the public and the freeing of the profession.

In this column, William Brady wrote:

Two factors have prevented many thousands of sufferers with diabetes from enjoying the boon of insulin treatment. First is the high cost of insulin which is artificially maintained under the monopoly granted to certain individuals or corporations by virtue of patents in the United States and Canada. This monopoly is sanctioned by the medical profession of both countries by some strange distortion of the fundamental principles of medical ethics.

This statement is absolutely untrue. Thirty units daily is about the average dose of insulin. The cost to the patient is usually less than 10 cents a day. When insulin was first discovered there was a period of approximately a year during which the cost was high, because manufacturers had to install large plants which

involved expenditures of many hundreds of thousands of dollars. Since that time the cost of insulin has been steadily reduced. None of the discoverers received one cent in royalty. A small payment is made to the Insulin Foundation, which, however, uses the money thus received to control definitely the quality of the material and to protect the public against contaminated or inefficient preparations.

Dr. Brady says in his next statement:

The second factor which has operated to withhold the benefit of insulin treatment from a great many diabetes patients is the onerous necessity of reporting two or three times a day to physician or nurse for the dose of insulin or even the task of preparing and administering the subcutaneous injection to oneself.

A physician whose practice is limited almost exclusively to diabetes and who is recognized throughout the world as a leader in this field makes the statement that he has not known or heard, during the past fifteen years, of ten physicians who give insulin daily to patients. Seldom are nurses required to make such injections and then it is only for patients who are helpless or who wish, because they are able to pay for such service, to have this attention. Moreover, the use of insulin has saved the lives of thousands of children who would quite certainly have died of diabetes if insulin had not been discovered.

Perhaps the most pernicious and false of all the insinuations in this item is the following:

Of course protamine insulin must be injected hypodermically like ordinary insulin. Scientific medicine, a field where humanity formerly had eminent domain, under the present monopolistic trend, is becoming subsidized medicine, and research or laboratory workers dependent on subsidies, grants, foundations or scholarships donated by commercial interests, discover what their owners want discovered or else. This unfortunate situation perhaps explains why we have not yet discovered a means of getting the effect of insulin from medicine the patient may take by mouth.

In research laboratories throughout the world ever since insulin was discovered, investigators have worked constantly and intensively to find some substitute for insulin that could be taken by mouth, in fact, such substitutes have been offered from time to time by investigators who felt that they had achieved this highly desirable discovery. Unfortunately, however, in each instance the preparation has been found by actual tests to be unreliable. A vast reward obviously awaits the independent nonmedical investigator, the manufacturer or the laboratory which makes this discovery. If, however, it is made by a physician, in accordance with the ethics of the medical profession, he will not derive any income in the shape of a royalty from his discovery.

The final paragraph of Dr. William Brady's article seems to be a promotion of vitamin B in the treatment of diabetes, arguing that patients with the disease have a lesser amount of sugar in their excretions when they take excess vitamin B for a few weeks, and stating also that patients with diabetes require less insulin when they take vitamin B. There is no good scientific evi-

dence to warrant this statement. If vitamin B were of any real value in diabetes, it would have replaced the use of insulin long ago because, like many other remedies, its attributed effect has certainly not been hidden under a bushel.

From time to time in the past, THE JOURNAL has called attention to other errors and idiosyncrasies in the writings of Dr. William Brady. The notions therein expressed regarding infection, the weird ideas of physiology, the preposterous slang, and the pseudo-humor, all coupled with false and unwarranted insinuations regarding medical service, have made Dr. Brady's column of late an unsound guide for any reader.

Current Comment

"MUCIN VIRULENCE" OF HAEMOPHILUS INFLUENZAE

The possibility of increasing the virulence of pneumococci, streptococci, staphylococci or meningococci by suspending these bacteria in 5 per cent gastric mucin was discovered about five years ago by Nungester and his associates¹. Their observations have been confirmed by other investigators². Recently Fothergill and his co-workers³ at the department of bacteriology of Harvard Medical School have applied the Nungester technic to a restudy of the toxicity and pathogenicity of the influenza bacillus. They found that it was necessary to inject a 1:4 dilution of a standard suspension of *Haemophilus influenzae* intraperitoneally into mice to cause death. The same micro-organisms suspended in 5 per cent gastric mucin, however, would kill mice if injected in dilutions as high as 1:40,000. The micro-organisms thus injected rapidly invade the blood stream, about twenty-five micro-organisms (plate count) per drop of tail blood being demonstrable by the end of fifteen minutes, increasing to many thousand bacteria per drop by the end of forty-five minutes. As soon as possible after death, one drop of heart blood (or a small quantity of peritoneal washings) was mixed with 1 cc. of 5 per cent gastric mucin and injected intraperitoneally into a second normal mouse. In this way as many as eleven successive mouse passages were made before the series was interrupted by contamination. After ten passages the "mucin virulence," i. e., virulence of the micro-organisms when suspended in 5 per cent gastric mucin, was increased a hundredfold. There was, however, no demonstrable increase in the toxicity or pathogenicity of the culture when injected without admixture with mucin. Whether the increased virulence caused by suspending *Haemophilus influenzae* in commercially available gastric mucin has any bearing on the problem of the infectivity of the influenza bacillus through the nasal or gastric mucosa has not yet been determined.

¹ Nungester W. J., Wolf A. A. and Jourdonais L. F. *Proc. Soc. Exper. Biol. & Med.* **30**, 120 (Nov.) 1932.

² Miller C. P. *Proc. Soc. Exper. Biol. & Med.* **32**, 1136-1138 (April) 1935. Rake Geoffrey. *Proc. Soc. Exper. Biol. & Med.* **32**, 1523 (June) 1935.

³ Fothergill L. D., Dingle J. H. and Chandler Caroline A. *J. Exper. Med.* **65**, 721 (May) 1937.

INHERITANCE OF PARALYSIS AGITANS

Although many causes have been suggested for Parkinson's disease, one of recurring interest is the factor of heredity. Allan¹ examined seventy-two consecutive patients with the shaking palsy from whom it was possible to secure an adequate family history. In seven there was no family history of the disorder but a past history of probable encephalitis, in twenty neither the family nor the past history offered an explanation, but in forty-five cases near relatives, parents, siblings or children had the same disorder. From twenty-four patients it was possible to obtain rather complete family history, and charts showing the pedigrees were reproduced. There were seventy-nine instances in which the trait was present in the children and in one parent. In thirty-six cases palsy was present in the parent but not in the children, but in twenty-eight of these families the children were under 50 years of age. In eight a generation was skipped, and in six a whole sibship was reported as having palsy. In three instances both parents had palsy. In one instance there were six children under 40, with one affected. In another family all four children lived to be over 70 and were affected, and in one all four children from 27 to 33 years of age were said to be affected. Although some of the facts of this investigation in North Carolina suggest the recessive character of this trait, the weight of evidence indicates that, in about two thirds of the cases studied, paralysis agitans was inherited as a dominant trait, probably conditioned by a single autosomal gene.

PECTIN AS AN ANTISEPTIC

The tentative use of pectin-agar-maltose mixtures in the treatment of diarrheas of infants led Edith Haynes¹ and her associates at the Indiana University Medical Center to study the possible bactericidal action of commercially available pectins. They found that 2 per cent commercial pectin added to heart-infusion broth would kill *Escherichia coli* within twenty-four hours, while control cultures adjusted to the same pH showed a thousandfold increase in bacterial count. This in vitro bactericidal property, however, is dependent on the acidity of the pectin broth mixture. The antiseptic properties are completely inhibited by adjusting the reaction of the mediums to neutrality or alkalinity. While pectin, therefore, might be expected to be an effective antiseptic in the stomach, it would be expected to be ineffective in the normally alkaline intestinal tract. Aqueous solutions of pectin are apparently nonirritating when applied to exposed wound surfaces. When applied to infected wounds, pectin causes a marked decrease or complete disappearance of local streptococci and staphylococci. Its application also appears to stimulate the growth of granulation tissues. These observations would seem to warrant a further study of pectin as a surgical dressing.

¹ Allan William. *Inheritance of the Shaking Palsy*. *Arch. Int. Med.* **60**, 424 (Sept.) 1937.

² Haynes Edith, Tompkins C. A., Washburn Grace and Winters Mathews. *Proc. Soc. Exper. Biol. & Med.* **36**, 839 (June) 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

University News—A new department of public health nursing has been announced at the University of California at Los Angeles, with Eleanor L. Beebe in charge as assistant professor of public health nursing.

Annual Symposium on Heart Disease—The heart committee of the San Francisco County Medical Society will hold its eighth annual graduate symposium on heart disease at the University of California, Stanford University and San Francisco hospitals, November 17-18. The course will cover the various aspects of heart disease, including diagnosis, prognosis and treatment. Recent advances in cardiology will be reviewed and evaluated and practical clinical demonstrations will be held. The registration fee will be \$2.

Society News—Dr. Victor G. Heiser, New York, lectured at the Philharmonic Auditorium, Los Angeles, October 11, under the auspices of the Modern Forum, on "More of an American Doctor's Odyssey."—Dr. Dean E. Godwin, Long Beach, among other speakers, will discuss two cases of Streptococcus haemolyticus meningitis with recovery following use of sulfanilamide before a joint meeting of the Los Angeles Society of Ophthalmology and Otolaryngology and the Research Study Club of Los Angeles, October 18.—The Los Angeles Obstetrical and Gynecological Society was addressed, October 12, by Drs. Francis M. McKeever and Harry Dietrich on "Late Results of Birth Injuries" and "Early Recognition and Treatment of Birth Injuries" respectively.—Dr. Ludwig A. Emge, San Francisco, discussed "Treatment of Pelvic Cancer in the Female" before the San Diego County Medical Society, October 12.

CONNECTICUT

Personal—Dr. Mario L. Palmieri has been appointed health officer of Middletown on a full time basis, and Dr. Homer C. Ashley has been appointed to a similar position in the town of New Hartford, succeeding Dr. Theodore B. Ackerley.

Health Field Day—Health agencies of the town of Greenwich sponsored a "health field day" September 15 with general sessions in the morning and evening and section sessions in the afternoon. Speakers included:

Dr. Matthias Nicoll Jr. White Plains N. Y. Unsolved Problems in Public Health
Ira V. Hiscock CPH New Haven Conn. The Twenty Points on Which Health Conservation Contests Are Based
Roger L. Offen DDS Stamford Dental Caries
Dr. Charles A. McKendree New York Neuropsychiatric Trends in Economic Depressions

DISTRICT OF COLUMBIA

New Brain Research Institute—The Georgetown University Brain Research Institute was established at the university's school of medicine, September 10, under the direction of Dr. Othmar C. Solnitzky, professor of anatomy, with Dr. Francis J. Warner as assistant director. A program of neurologic research will be launched along the following directions:

1. A complete study of the brains of vertebrates from the cyclostomes to the primates.
2. A thorough study of the development of the human brain with special regard to its morphology, nuclear masses and fiber tracts.
3. Experimental study of the function of the various nuclei and fiber tracts of the brain by means of Marchi degeneration and retrograde cell degeneration.
4. A comprehensive study of the neuropathology of the human brain.

The institute already possesses a large collection of animal and human brains, many of which are sectioned and stained and an animal experimental laboratory is being built. A large library of books, monographs and reprints covering every phase of the projected research is available. All the facilities of the institute will be made available to those interested in any phase of brain research. Individual desks and microscopes will be placed at the disposal of investigators. Contributions of animal and human brains, both normal and pathologic as well as reprints of all neurologic publications will be gratefully accepted and duly accredited it was announced.

FLORIDA

District Meeting—The first annual meeting of the South Central Medical District of the Florida Medical Association will be held at Melbourne, October 21, at the Golf and Country Club. The speakers will include Drs. Charles J. Collins, Orlando, on "Abnormal Bleeding in the Middle-Aged Woman," Ernest W. Potthoff, Titusville, "Common Skin Diseases in General Practice," and Eugene L. Jewett, Orlando, "Bone Injuries in General Practice."

ILLINOIS

Society News—Dr. Herbert N. Rafferty, Robinson, read a paper entitled "Success in Hernia Repair" before the Willamson County Medical Society at Marion, October 7.—The Will-Grundy County Medical Society was addressed at Joliet, October 6, by Dr. George de Tarnowsky, Chicago, on gall bladder disease.—The Physicians' Association of the Illinois Department of Public Welfare will hold its second annual meeting in the rooms of the Kankakee Medical Society, Kankakee, October 22, under the presidency of Dr. George A. Wiltrakis, Elgin. Speakers will include Drs. Shirley W. Lane, Kankakee, on "Medical Economics in Relation to State Service," Louis Belinson, Lincoln, "Progressive Muscular Dystrophy," and G. Heilbrunn, Elgin, "Insulin Shock Therapy in Dementia Praecox."

Chicago

University News—The speakers at the banquet session of the symposium on occupational diseases of Northwestern University Medical School, September 28 were Mr. B. C. Heacock, president, Caterpillar Tractor Company, Peoria, and of the Illinois Manufacturers Association, on "The Prevention of Occupational Disease," and Dr. Morris Fishbein, Editor, THE JOURNAL, "The Future of Industrial Medicine." Dr. Irving S. Cutter, dean of the medical school, was toastmaster.

INDIANA

State Medical Election—Dr. Edmund M. Van Buskirk, Fort Wayne, was chosen president-elect of the Indiana State Medical Association at its annual meeting in French Lick, October 6. Dr. Herman M. Baker, Evansville, will become president January 1, succeeding Dr. Edmund D. Clark, Indianapolis. The association will hold its next annual session in Indianapolis in 1938.

Society News—Dr. Fred R. Clapp, South Bend, discussed leukorrhea before the St. Joseph County Medical Society in South Bend, September 14.—At a meeting of the Fort Wayne Medical Society, Fort Wayne, September 14, Dr. Jerome R. Head, Chicago, discussed thoracic surgery.—Dr. John deJ. Pemberton, Rochester, Minn., addressed the Tippecanoe County Medical Society, Lafayette, September 14, on "Carcinoma of the Rectum and Rectosigmoid."

Sources of Infection Traced in Syphilis Campaign—An effort is being made to trace all sources of infection in the new patients with syphilis who this year entered the clinic of the Indianapolis City Hospital, Indianapolis, as a part of the local campaign against the disease. A preliminary step in the campaign included a study of the age, race and occupation of these patients with a view to drawing up a plan to control the disease. The council of the Indianapolis Medical Society has approved the program, which depends largely on the independent practitioners' cooperation with local health authorities. One objective of the campaign is "no child born with syphilis in Indianapolis by 1940!"

IOWA

District Meeting—The Iowa-Illinois District Medical Society met in Davenport, September 29, when the following program was offered:

Dr. Fredrick A. Wilhus Rochester Minn. Coronary Disease
Rev. Alphonse M. Schwitalla SJ St. Louis Social Aspects of Medical Practice
Dr. George de Tarnowsky Chicago Lon Back Pain
Dr. Morris Fishbein Chicago Social Security and the Doctor

Interns Hold Graduate Conference—About 150 former interns of the Iowa Methodist Hospital, Des Moines, members of the current class, members of the hospital staff and several guests attended a breakfast, August 22 after which the following speakers among others participated in a graduate conference: Dr. Thomas A. Burcham Des Moines Cholecystography, Dr. Howard I. Down Sioux City, Carcinoma of the Rectum, and Dr. Samuel J. Lang, Evanston, Ill., 'Loa Back Pain'.

LOUISIANA

Personal—Dr Murphy M Sims, Benton, has resigned as health director of Bossier Parish to engage in private practice, Dr Herbert N Barnett, New Orleans, has been appointed acting director

Prohibit Sale of Proprietary Drugs for Weight Reduction—The sale of proprietary drugs for reduction of body weight is prohibited by law in Louisiana, in accordance with a regulation adopted by the Louisiana State Board of Health, September 15. Manufacturers and dealers are warned that this regulation will be rigidly enforced in the interest of the protection of the public health

MARYLAND

New District Health Officer—Dr Charles Howe Eller, Richmond, director of the bureau of rural health, Virginia State Department of Health, has been appointed health officer of the Eastern Health District in Baltimore, effective October 1. He succeeds Dr Harry S Mustard, who resigned to become the Hermann M Biggs professor of preventive medicine, New York University College of Medicine, New York. According to *Baltimore Health News*, the choice was announced by the Johns Hopkins School of Hygiene and Public Health, which has established a special area for teaching and research in the district. A graduate of the University of Colorado School of Medicine, Denver, Dr Eller has served as health officer of Valencia County, N M., and as health officer of Charlottesville, Va.

Spotted Fever and Psittacosis Made Reportable—Rocky Mountain spotted fever and psittacosis have been added to the list of reportable diseases in Maryland according to a recent announcement from the state board of health. The complete list now includes typhoid, undulant fever, tularemia, malaria and typhus fever, the so-called children's diseases, including whooping cough, scarlet fever, diphtheria, measles and infantile paralysis, diarrhea, dysentery, influenza, septic sore throat, the pneumonias, tuberculosis, smallpox, trichinosis, syphilis, gonorrhea and other infectious or contagious diseases. Certain diseases, such as tetanus, and diseases that may be contracted in certain occupations, such as lead poisoning and certain forms of skin diseases, are also reportable, the department stated.

MICHIGAN

Personal—Dr Emily L Rikpa has been appointed field physician for the bureau of child hygiene and public health nursing of the state department of health, succeeding Dr Vida Gordon, who resigned to accept a position with the University of Michigan Health Service. Dr Berneta Block, Pyengyang, Korea, has been appointed field physician, succeeding Dr Pearl A Tononen, resigned.—Dr Hugo A Freund, Detroit, has been appointed a member of the Public Welfare Commission of Detroit.—Dr Roy D McClure, Detroit, read a paper entitled "The Tannic Acid Treatment of Burns" before the forty-sixth session of the French Congress of Surgery in Paris, October 4.—Dr John E Handy, Caro, was guest of honor at a dinner in Caro, October 7, given by the Tuscola County Medical Society in recognition of his completion of fifty years in the practice of medicine.

MINNESOTA

Graduate Courses—Clinics, lectures and demonstrations make up the graduate courses now being offered at the Center for Continuation Study of the University of Minnesota, Minneapolis, in cooperation with the Minnesota State Medical Association. *THE JOURNAL* reported the first of these institutes September 18, page 962. Others in the series include the following:

Surgical Diagnosis and Treatment November 16
Dermatology and Syphilology December 6-11
Ophthalmology and Otolaryngology January 16-21
Medical Diagnosis and Treatment February 7-12
Traumatic Surgery March 7-12
Endocrinology April 4-9

The dates for the remaining courses in diagnostic radiology, clinical pathology and proctology have not been definitely determined. Each seminar will occupy the full time of those taking the course from Monday to Saturday inclusive. There will be no evening classes. Special library facilities for each seminar will be provided at the center which also offers living accommodations. Round table conferences are held at the close of the daily program to give the graduates an opportunity to ask questions. All correspondence should be addressed to the director of the Center for Continuation Study, University of Minnesota, Minneapolis or Dr William A O'Brien, medical representative at the same address.

MISSOURI

New Cancer Commission—Appointment of the full commission to select a site for, construct and operate a state hospital for indigent cancer patients has been announced. Dr Ellis Fischel, associate professor of surgery, St Louis University School of Medicine was appointed chairman of the commission several months ago. Other members are Dr Paul F Cole, Springfield, Ed F Swinney, banker of Kansas City, and Waldo Holt, Louisiana, president of the Missouri Bankers Association in 1931.

Dr Eaton Goes to Rockefeller Foundation—Dr Monroe D Eaton Jr of the department of bacteriology and immunology, Washington University School of Medicine, St Louis, has been appointed to the staff of the International Health Division, Rockefeller Foundation, New York, effective September 1. His work in the laboratories of the health division at the Rockefeller Institute is concerned chiefly with studies of malaria. Dr Eaton graduated from Harvard University Medical School, Boston, in 1930.

Clinical Pathologic Conferences—Nine clinical pathologic conferences will be held by the Jackson County Medical Society during its coming program year. With emphasis on the clinical aspect, an attempt will be made in every instance to correlate the relationship of symptoms and signs to the lesions observed. The first conference was held September 28, when three cases of sudden death from heart disease without gross changes and a case showing a mediastinal condition were presented. At its regular meeting, September 21, Dr Arthur E Hertzler, Halstead, Kan., discussed "Operating Room Diagnosis of Breast Tumors."

MONTANA

Plague Infection—*Public Health Reports* states that plague infection was reported, under date of September 2, to have been demonstrated, by animal inoculation, in tissue from two ground squirrels (*Citellus elegans*) taken separately, August 20 and 23, 4½ and 5 miles southeast of Cameron, Madison County.

NEBRASKA

Mid-West Clinical Assembly—The Omaha Mid-West Clinical Society will hold its fifth annual assembly at the Hotel Paxton, October 17-22, under the presidency of Dr George A Young. The program will include:

Dr Hans H F Reese, Madison, Wis. The Constitution and the Biochemical Evaluation of the Nervous Patient
Dr Owen H Wangenstein, Minneapolis. The Significance of Mechanical Factors in the Genesis of Acute Appendicitis
Dr William J Kerr, San Francisco. The Anxiety States in General Practice
Dr Luther Emmett Holt Jr, Baltimore. Abnormalities of Fat Metabolism in Childhood
Dr Thomas Leon Howard, Denver. The Present Status of Urinary Bactericides
Dr Willis D Gatch, Indianapolis. The Recognition and Treatment of Bowel Obstruction
Dr William L Benedict, Rochester, Minn. External Diseases of the Eye in Relation to General Systemic Diseases
Dr Jesse L Bollman, Rochester, Minn. The Experimentally Produced Peptic Ulcer: Development and Treatment
Dr Edward A Schumann, Philadelphia. Observations on Ectopic Pregnancy
Dr Arthur Bruce Gill, Philadelphia. Treatment of Arthritis from the Orthopedic Point of View

There will be daily round table luncheons and informal dinners in the evening. A public meeting will be addressed Sunday evening, October 17, by Dr Thomas Parran, surgeon general U S Public Health Service, Washington, D C., on "Syphilis and the Public Health." Wednesday evening, October 20, has been designated "Omaha-Douglas County Medical Society Night."

NEW YORK

Hospital News—Two orthopedic services at the Rochester General Hospital have recently been combined with Dr Edward T Wentworth as chief of the service.—A new three story addition to St Joseph Hospital Far Rockaway was dedicated recently, giving the hospital a capacity of 135 beds.

Personal—Dr Clifford R Hervey, Oswego, retired August 31 after twenty years in the health service of the state, he joined the state department of health as sanitary supervisor in 1917 and received the title of district state health officer in 1923.—Dr Charles H Cole, for sixteen years superintendent of the Tuberculosis Hospital of Broome County, Chenango Bridge, retired from active service September 30.

Society News—Dr Russell L Cecil, New York, discussed "Serum Treatment of Pneumonia" before the Medical Society of the County of Nassau, Mineola, September 28, Dr Theo-

dore J. Curphey, New York, "Bacteriology of Pneumonia and the Modern Method of Typing," and Dr. Edward S. Rogers, Albany, "The State Campaign Against Pneumonia"—Dr. Walter T. Dannreuther, New York, addressed the Dutchess County Medical Society, September 8, on "Uterine Displacements."

Clinical Meeting of Buffalo Academy—The Buffalo Academy of Medicine will hold a clinical session at the Hotel Statler, Buffalo, November 17, with the following speakers:

Dr. Rudolf Schindler, Chicago. Clinical Value of Gastroscopy.
Dr. Robert L. Levy, New York. The Use of Drugs in the Treatment of Heart Disease.
Dr. Irvin Abell, Louisville, Ky. President American Medical Association. Responsibility of the Profession.
Dr. Richard B. Cattell, Boston. Diagnosis and Management of Surgical Diseases of the Colon and Rectum.

Dr. Morris Fishbein, Chicago, Editor, *THE JOURNAL*, will speak at the dinner on "Social Security and the Physician."

New York City

First Harvey Lecture—Selig Hecht, Ph.D., professor of biophysics, Columbia University, will deliver the first Harvey Society Lecture of the current series at the New York Academy of Medicine, October 21. His subject will be "The Nature of the Visual Process."

Unnecessary Noise Reduced—Figures recently released by Dr. John L. Rice, the city health commissioner, indicate that the ordinance on noise abatement in New York has been effective. From April 21, 1936, when the ordinance was enacted, until Jan. 1, 1937, the city health department handled more than 900 complaints. From Jan. 1, 1937, to October 5, the department handled about 200 complaints made directly to it and an additional 434 referred by the mayor's office. A review of the campaign against noise shows the result of a concentrated attack on the problem. In 1929, the appointment of a noise commission was announced and the facilities of the health department were placed at the disposal of the commission which embarked on a three-year study of noise. The Noise Abatement Commission was dissolved in 1932, and a second report was published in the fall of that year outlining methods by which the commission believed a municipality may achieve reasonable quiet. The city ordinance has already shown evidence of beneficial results.

NORTH CAROLINA

Hospital News—Dr. Joseph R. Blalock, New York, conducted a two-week psychiatric clinic at the State Hospital, Raleigh, August 1-14.—The name of the Sternberger Children's Hospital, Greensboro, has been changed to the Sternberger Hospital for Women and Children.

Society News—Dr. Lewie M. Griffith, Asheville, addressed the Buncombe County Medical Society, September 20, on "Four Hundred and Four Cases of Maxillary Sinusitis, a Clinical Analysis" and Dr. John L. Ward, Asheville, reported a case of Rocky Mountain spotted fever.—Drs. Gilbert M. Billings, Morganton, and Henry Eugene Barnes Jr., Hickory, addressed the Catawba Valley Medical Society, September 14, on "Plastic Surgery of the Nose" and "Some Aspects of Gonorrheal Therapy" respectively.

Personal—Dr. Isaac E. Harris Jr., Creedmoor, has been appointed to the staff of a hospital on the plantation of the Firestone Tire and Rubber Company in Liberia, according to a newspaper report.—Dr. Samuel M. Bittinger, assistant superintendent and associate medical director of the North Carolina Sanatorium for the Treatment of Tuberculosis, has been chosen assistant superintendent and medical director of the state's new sanatorium soon to be opened on Black Mountain, it is reported. Dr. Paul P. McCam, superintendent of the present sanatorium, will have charge of both institutions with an assistant superintendent in residence at each.—An oil portrait of Dr. Thomas Clarence Johnson, Lumberton, was presented by his friends in the community to the Thompson Memorial Hospital, Lumberton, September 13. It was hung in the Johnson House, a new nurses' home named for Dr. Johnson.

OHIO

University News—The Alumni Association of Western Reserve University School of Medicine has voted to establish a scholarship in the senior class in memory of the late Dr. Charles Franklin Hoover, professor of medicine from 1909 to 1927.

Institute on Cardiovascular Disease—The Academy of Medicine and the Heart Council of Greater Cincinnati will conduct their fifth annual institute on cardiovascular disease,

October 26. The guest speaker will be Dr. Horace M. Korr, professor of the theory and practice of medicine, State University of Iowa College of Medicine, Iowa City, who will lead a round table discussion on "The Treatment of Congestive Heart Failure" and give an address on "The Nature and Manifestations of Congestive Heart Failure." Clinical lectures and demonstrations will be held in the Cincinnati General Hospital.

PENNSYLVANIA

Society News—Dr. Leslie B. Hohman, Baltimore, addressed the Lycoming County Medical Society, Williamsport, October 5, on "Intelligent Diagnosis of the Neurotic."—The Venango County Medical Society was host to physicians of several surrounding counties September 24 at an open meeting with the following speakers: Drs. Roy R. Snowden, Pittsburgh, on "Medical Management of Hypertension"; Huo Roesler, Philadelphia, "Hypertensive Heart Disease"; John A. Kolmer, Philadelphia, "Septicemia"; George W. Crile, Cleveland, "Surgical Treatment of Hypertension"; and Maxwell J. Lick, Erie, president of the Medical Society of Pennsylvania.

Philadelphia

Personal—Dr. Dean A. Collins, formerly of Minneapolis, has been appointed assistant professor of physiology at Temple University School of Medicine.

University News—The 113th annual session of the Jefferson Medical College was inaugurated, September 20, with George Russell Bancroft, D.Sc., professor of physiologic chemistry and toxicology at the university, delivering the introductory lecture on "Some Goals in Medical Study."—Dr. Elliott P. Joslin, Boston, gave an address at the opening of the fall term of the Hahnemann Medical College of Philadelphia, September 27, entitled "Opportunities for the Medical Student."

Pittsburgh

Three Year Study of Fever Therapy—The Westinghouse Electric and Manufacturing Company has given \$50,000 to the University of Pittsburgh School of Medicine to support a three-year program of research in fever therapy. The study will provide data on humidity and temperature as it affects the human body. The aims of the study are:

1. To make fever therapy facilities more readily available in the Pittsburgh district.
2. To conduct concentrated clinical investigations into the further treatment of diseases using this method, chemical methods and combinations of the two and to make studies on a variety of diseases including those now treated with fever and others.
3. To make a critical study of all means of creating fever in an effort to discover the safest, simplest method with respect to mechanical operation, reliability, safety and in predetermined atmospheric environments.
4. To accumulate more knowledge concerning the reactions of microorganisms to their environmental conditions, particularly their reactions to heat including virulence, multiplication, growth and death.
5. To train personnel and to provide information for the medical profession and the public concerning the value of this type of medical procedure.
6. To make data of these studies available in determining proper atmospheric conditions among industrial workers as well as serving as a medical study for the comfort of man.

The study will be directed by the department of industrial hygiene of the school of medicine and affiliated hospitals. Hospitals in this group not already having fever therapy apparatus will install equipment within the next few months.

UTAH

Plague Infection—Under date of September 2, plague infection was reported to have been demonstrated by animal inoculation in tissue from a ground squirrel (*Citellus armatus*) shot August 19 west of Strawberry Reservoir, twenty-one miles southeast of Heber, Wasatch County, according to *Public Health Reports*.

VIRGINIA

Personal—Dr. George A. Wright has resigned as superintendent of the Southwestern State Hospital, Marion, to be effective December 1.—Dr. William B. Porter, Richmond, received the Jefferson Gold Medal of the Virginia Academy of Science at the recent annual meeting.

Society News—Dr. Charles C. Haskell, Richmond, addressed the Mid-Tidewater Medical Society recently at Gloucester Court House, on digitalis.—Drs. William L. Peple and Samuel W. Budd, Richmond, among others, addressed the Southside Virginia Medical Association in Burkeville, September 14, on "Further Observations on Management of Cancer of the Cervix."—The Southwestern Virginia Medical Society held a meeting at Mountain Lake, September 3, at

which invited guests included Drs Otis L Anderson and Lee E Sutton Jr, Richmond, who spoke on diagnosis and treatment of early syphilis and congenital syphilis, respectively

WISCONSIN

State Medical Election—Dr Albert E Rector, Appleton was chosen president-elect of the State Medical Society of Wisconsin at its annual meeting in Milwaukee, September 16, and Dr James C Sargent, Milwaukee, was inducted into the presidency. The next annual session will be held at Milwaukee in September. At the annual dinner of the society the council award for distinguished service to medicine and the public was presented to Dr Joseph F Smith Wausau. Dr Stephen E Gavin, Fond du Lac, retiring president, made the presentation to Dr Smith, who is the twelfth recipient to receive the award in the last seven years.

HAWAII

Society News—The council of the Hawaian Territorial Medical Association held the first of its newly initiated meetings, September 2-3, in Honolulu. The meetings, which will be held in September and February of each year, are to be attended by councilors and vice presidents of the association to discuss various medical problems of general interest.

Smallpox Develops at Sea—According to *Public Health Reports* a case of smallpox (varioloïd) occurred in a steerage passenger on the British steamship *Empress of Asia* which arrived at Honolulu September 5. The case was recognized by the ship's surgeon two days before the vessel arrived. The patient was taken to the ship's hospital and all third-class passengers and crew contacts were vaccinated. Those failing to show an immune reaction were detained at quarantine, while the others were released.

GENERAL

Specialty Board Examination in Psychiatry and Neurology—The next examination of the American Board of Psychiatry and Neurology will be held in New York, December 28. Applications to take the examination must be in the hands of the secretary, Dr Walter Freeman, 1028 Connecticut Avenue, Washington, D C, by October 25.

Health Exhibit at Golden Gate Exposition—The prevention of disease rather than its treatment will be the theme of the health exhibit planned for the Golden Gate International Exposition in San Francisco in 1939. A committee composed of representatives of medical and allied agencies in California has been appointed to work out the details of the health exhibit with Milton Silverman, head of the health and science division.

Society News—Dr Frank B Dorsey Jr, Keokuk Iowa, was chosen president-elect of the American Association for the Study of Gout at its annual meeting recently and Dr Frank H Lahey, Boston, was installed as president. Dr William Blair Mosser, Kane, Pa, is the secretary. The next annual meeting will be held in Washington, D C, in September. At the annual session of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons recently Dr James E King, Buffalo, was named the president-elect and Dr Paul Titus, Pittsburgh, was installed as president. Dr James R Bloss, Huntington, W Va, is the secretary.

Academy of Physical Medicine—The fifteenth annual meeting of the Academy of Physical Medicine will be held at the Hotel Walton, Philadelphia October 19-21, under the presidency of Dr Franklin P Lowry, Newton, Mass. The program will include the following speakers:

Sir Robert Stanton Woods London England Organization of a Physical Medicine Unit in a Teaching Hospital
Dr Chevalier L Jackson Philadelphia Electrocoagulation Through the Bronchoscope in the Treatment of Bronchial Tumors
Robert S Harris Ph D Cambridge Mass Medical Application of Radiant Energy
Dr Frederic Jay Cotton Boston Physical Therapy in Industrial Disease
Dr William B Snow New York Further Advances in Fever Therapy Improvement in Technique and Routine for Fever Therapy
Dr Isidore Gunzburg Antwerp Belgium Treatment of Rheumatism by Infra Red Hyperthermic Bath
Dr Martha Brunner Ornstein Vienna Short Wave and Ultra Short Wave Therapy

Rocky Mountain Medical Journal—Beginning with the January issue, *Colorado Medicine* will be known as the *Rocky Mountain Medical Journal*. When the change is effected the new publication will embrace the state of Utah, which has been publishing its own journal as a quarterly. The house of delegates of the Utah State Medical Association voted September 3 to enter into an agreement with the Colorado State Medical Society whereby we may cooperate with them in the maintenance of the *Rocky Mountain Medical Journal* the details of

such agreement to be left to the Council. The journal will continue to represent the Colorado State Medical Society, the Wyoming State Medical Society and the Colorado Hospital Association, and ownership of the publication will remain with the Colorado State Medical Society.

American Board Examination in Obstetrics and Gynecology—The American Board of Obstetrics and Gynecology will hold its next examinations for group B candidates in various cities of the United States and Canada on Saturday Nov 6, 1937, and Saturday Feb 5, 1938. Application for admission to these examinations must be filed on an official application form in the office of the secretary at least sixty days prior to these dates. The general oral, clinical and pathologic examination for all candidates (groups A and B) will be conducted by the entire board, meeting in San Francisco, June 13-14, 1938, immediately prior to the session of the American Medical Association. Application for admission to group A examinations must be on file in the secretary's office before April 1. Further information and application blanks may be obtained from Dr Paul Titus, secretary, 1015 Highland Building, Pittsburgh, Pa.

Association of Medical Colleges—The forty-eighth annual meeting of the Association of American Medical Colleges will be held at the Fairmount Hotel, San Francisco, October 25-27, under the presidency of Dr Edward Stanley Ryerson, Toronto. A symposium on examinations will open the session Monday morning with the following speakers:

Dr Ewen M MacEwen dean State University of Iowa College of Medicine Iowa City
Dr Harold S Diehl dean of medical sciences University of Minnesota Medical School Minneapolis
Dr Richard B Dillehunt dean University of Oregon Medical School Portland

A symposium on the community aspects of medicine will be conducted by the following:

Dr Harry R Wahl dean University of Kansas School of Medicine Kansas City
Dr Benjamin W Black Oakland director Alameda County Institutions
Ralf Couch A B secretary University of Oregon Medical School

Other speakers on the program will include:

Calvin P Stone Ph D Stanford University Calif and Dr George S Johnson San Francisco professors of psychology and medicine (neuropsychiatry) respectively Stanford University Integration of the Teaching in Psychology and Psychiatry
Drs Franklin G Ebaugh professor of psychiatry, and Maurice H Rees dean University of Colorado School of Medicine Denver Teaching of Psychobiology by Means of Personality Study
Dr Ryerson Cultivation of Health in Relation to the Medical Curriculum

Government Services

National Advisory Cancer Council Formed

In conformity with the National Cancer Institute Act, signed August 5, the following persons have been appointed to form the National Advisory Cancer Council, it was announced September 29.

Dr James Ewing director of cancer research Memorial Hospital and professor of oncology at Cornell University Medical College New York
Dr Francis Carter Wood director of the Institute of Cancer Research Columbia University College of Physicians and Surgeons New York
Clarence C Little Sc D Bar Harbor Maine head of the Roscoe B Jackson Memorial Laboratory and managing director American Society for the Control of Cancer
Arthur H Compton Ph D professor of physics University of Chicago Chicago
James B Conant LL D Cambridge Mass president Harvard University

Dr Ludwig Hektoen professor and head of the department of pathology Division of Biological Sciences University of Chicago director John McCormick Institute for Infectious Diseases and chairman division of medical sciences National Research Council

A meeting of the council is tentatively planned during the month of October to consider rules and regulations on the basis of which grants in aid will be made to further promising cancer research projects, to determine rules and regulations under which fellowships will be established, and to set up minimum requirements with regard to the facilities of treatment centers to which radium will be lent, all of which are in accordance with the stipulations of the recently enacted law. The National Cancer Institute will be erected on the site at Bethesda, Md, recently donated by Mrs Luke Wilson and her son. It will be part of the National Institute of Health in the U S Public Health Service which is under the directorship of Asst Surg Gen Lewis R Thompson. A director for the cancer institute has not yet been named but Dr Thomas Parran surgeon general of the public health service, will serve as ex officio chairman of the council.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 18, 1937

Services of Missionary Hospitals to the Wounded in China

The secretaries of the British missionary societies have held a conference in London regarding the present emergency in China. The meeting was impressed with the unprecedented opportunity of rendering medical and refugee service to troops and civilians alike in areas where fighting is taking place. Various missionary hospitals are well situated to serve the needs of the different localities affected. The conference felt that each society should make determined efforts not only to maintain their regular hospital work but to increase and strengthen their personnel and equipment, so as to render help to war victims without respect to nationality. These hospitals are in many cases desperately crowded with patients. The doctors and nurses are overwhelmed with demands on their time and strength, and it is likely that, with the development of aerial war and attempts to bomb inland cities, medical services will be called for on a continuously larger scale and over a wide front. The efforts to enforce any kind of blockade of China make it urgent that medical supplies should be dispatched as early as possible. It is hoped that hospitals will also be made available as bases from which mobile units may be organized. The chief hospitals concerned are those of the London Missionary Society at Tientsin and Tsangchow, the Methodist Missionary Society Hospital at Wutung, the Kaifung hospital of the China Island Mission, the Taiyuan hospital of the Baptist Missionary Society, the S. P. G. hospital at Tatung and the Cheloo Union Hospital, for which various missionary societies are responsible, as well as some American bodies. All these hospitals have from forty to 150 or more beds. The Quakers have no work in the area at present affected by the hostilities, but one of the last acts of the Quaker World Conference, recently held at Philadelphia, was to endorse proposals for a Quaker center in Shanghai similar to the centers in many European capitals.

Treatment of Bladder in Spinal Injuries of War

At the Section of Urology of the Royal Society of Medicine, Sir John Thomson-Walker read an important paper in which he said that the treatment of the bladder in the large number of cases of spinal injury was one of the surgical failures of the Great War. The probable cause was that the methods used in peace were unsuitable in war, partly because of the surroundings and partly because of the varying ability and lack of coordination of those through whose hands the wounded had to pass. Destruction of the supralumbar cord at any point was followed immediately by complete retention of urine. After a variable time the lumbar center recovered tone and involuntary micturition was established. In the large number of cases under Thomson-Walker's care these two stages were clearly defined. The average duration of the retention in thirty consecutive cases was fifty-five days, the shortest being twenty-four hours and the longest eighteen months. After some days or hours the urine began to dribble away, the bladder remaining distended (retention with overflow). The stage of periodic reflex micturition (the automatic bladder) began gradually there being a transition period of partial distention in which periodic contraction expelled a quantity of urine. In the fully developed stage of periodic reflex micturition the bladder was a purely reflex organ with a capacity varying from 2 to 12 ounces or more and involuntary micturition occurring at intervals of from a quarter of an hour to two or three hours.

In his extensive experience as genito-urinary specialist in the great military hospital, Thomson-Walker found urinary sepsis

so frequent that the death rate from it in spinal cases was 80 per cent—a lamentable tale of surgical failure. How was it brought about? The universal treatment of the bladder was intermittent catheterization. Septic catheterization was responsible. The catheter was passed as early as possible and used as frequently as circumstances permitted. After each passage the bladder became distended with grossly infected urine and the infection passed to the kidney. Thomson-Walker discussed the alternative methods of treatment: (1) nonintervention, (2) expression of bladder contents by pressure and massage, (3) the tied-in catheter and (4) early or prophylactic cystotomy.

1. An American surgeon, E. A. Besley (*THE JOURNAL*, Aug. 25, 1917, p. 638), strongly recommended that the bladder be allowed to distend until overflow takes place and eventually periodic micturition is established. He has seen no damage result to bladder or kidneys, but rupture of the bladder has been recorded by others. Thomson-Walker has had no experience with this method and without more evidence that it is without deleterious effect does not recommend it for universal adoption.

2. In some cases the expression of the bladder contents by pressure and massage is easy, in others difficult. It should be begun before distention is marked, when the method is painful. Contraction of the bladder sphincter is a difficulty. Cases of rupture of the bladder by this method were often spoken about during the war, but figures are not available. There is a danger of this complication when a large number of medical officers and orderlies, of varying skill, use the method. It is entirely unsuited for cases of established urinary sepsis.

3. With the tied-in catheter cystitis will probably develop but as there is free exit infection does not ascend to the kidney.

4. During the war Thomson-Walker advocated entire avoidance of the catheter and drainage of the bladder by suprapubic cystotomy. He did not expect to avoid cystitis entirely, but distention of the bladder with septic urine in the intervals between catheterizations, which caused ascending pyelonephritis. It gave good results in some cases. Objections to it are that it is difficult to get water-tight drainage and that cystitis is certain to develop. But cystitis without intravesical pressure is not dangerous.

In the discussion, Sir Alfred Webb-Johnson said that an authoritative statement that a catheter should never be passed in the presence of a spinal injury would save many lives. In the war he persuaded the Red Cross to erect a hut in which were concentrated such cases of spinal injury. It proved difficult to get hold of cases of "virgin bladder," for either in the ambulance train or at the casualty clearing station somebody was pretty sure to have insisted on passing the catheter. In sixty-six cases on which they were able to concentrate, both the expression method and the nonintervention method were carefully tried. Neither method was perfect, but each was worth a trial. It soon became evident that the expression method must not be left to a heavy-handed orderly and but seldom must be entrusted to a nurse, though it could sometimes be carried out by a well-instructed sister. The great differences between bladders were illustrated as soon as an attempt was made to empty by expression. Yet it was possible at one time to walk into that hut of twenty beds and see twenty specimen glasses of urine all quite clear and free from infection.

The Prevention of Catgut Tetanus

For the prevention of tetanus resulting from the use of catgut in operations, the minister of health has issued new regulations. Catgut which is sold under his license under the Therapeutic Substances Act is free from any risk of infection as its manufacture is strictly controlled and it is properly sterilized before being put on sale. But deaths from tetanus due to the use of catgut that has not been so sterilized occur from time to time. The new regulations require all ligatures and sutures which are not sold under the Therapeutic Substances Act to bear a label stating in prescribed terms the

efficient sterilization is necessary before use. By this safeguard surgeons will be able to distinguish at once ligatures and sutures that require sterilization from those which do not.

PARIS

(From Our Regular Correspondent)

Sept 18, 1937

Chair of Social Medicine in Medical School

The municipal council of Paris has arranged with the Faculté de médecine to organize a department of social medicine. This is necessitated by the rapid development of the laws of social aid and the widespread application of public welfare movements and social insurance in this country. An appropriation was made by the council for the salary of the head of this newly created teaching department. In a book published in 1925 as a part of an encyclopedia of clinical medicine, Dr Louis Guinon stated that social medicine includes social hygiene and the legislation incident thereto, as well as a study of the sociological, economic, political and pedagogic factors which permits its organization and extension in the world. In enumerating the various branches of medicine that would be included it is evident that no sharp line of demarcation was made by Guinon between social medicine and hygiene on the one hand and general medicine on the other. Hence according to Dr Noir, in a recent editorial in the *Concours médical* a great deal of study will be necessary to define the scope of teaching of the newly created chair of social medicine. The latter ought only to take up legislation on the subject and its practical application.

First International Congress on Infantile Psychiatry

At the meeting of the first International Congress on Infantile Psychiatry, July 24-31, in Paris, the question of psychiatry in school children was the subject of a number of papers. There was a unanimity of opinion on the importance of this problem from the point of view of prophylaxis of crime and recuperation of the socially handicapped. The necessity of having specially trained teachers in the classes for such children was emphasized. It is essential to make a distinction between simple mental debility and the abnormals with well defined troubles, such as the schizophrenic, impulsive and perverse types. The psychologic and analytic pedagogy must vary according to the individual case. It is also essential to take into consideration the family environment and its reactions on the child, in order to clear up certain disturbances. Mental debility as a cause of infantile and juvenile delinquency was discussed by foreign and French physicians who had a large experience in juvenile courts. It was generally agreed that mental debility cannot be considered as the only cause of delinquency, constituting only about 27 per cent of all the cases. Troubles of character, the influence of education and the social surroundings account for many of the cases. The mentally debilitated child lacks the capacity to discriminate, is impulsive, is easily influenced and, as the result of making a failure of his life, needs money and is thus led to commit criminal acts. The majority can be educated, only those presenting serious character changes being incorrigible. Delinquent children are more commonly found when the family environment leaves much to be wished for or when the parents have been divorced or, finally, in the case of children who have been abandoned.

The Model Village at the 1937 Paris Exposition

In an article in the August 1 issue of the *Suède médical* is a description of one of the exhibits, the model village, at the exposition. The author states that too many villages in France have not kept up with the progress made in sanitary methods. It is a common sight to see a manure pile in front of the farm house and the liquid portions finding their way into the streets. The stables are dark and poorly ventilated, the living rooms often built directly on a level with the soil, with comparatively few windows and the bedrooms poorly ventilated. For drink-

ing, washing and cooking purposes, water of doubtful purity from a well or other source situated dangerously close to out-houses is still used. Of 38,000 townships in France, there are 20,000 without a central water supply. The model village is an effort to show how the conditions just enumerated can be and are already being corrected. The model is constructed for a village of from 1,500 to 2,000 inhabitants, the town hall forming the nucleus as it does in all French country towns. At the schoolhouse the principles of hygiene will form an important part of the curriculum, and there is a building in which the various agricultural cooperatives will be sheltered. A model village home is shown which consists of well aerated rooms and better toilet facilities than is at present deemed necessary. Stables for horses and cattle with ideal sanitary conditions, as yet rarely to be seen in France, are shown. Every method of securing a better water supply for small agglomerations forms a part of the exhibition.

Negative Tuberculin Skin Reactions in Children

Prof F Bezançon and associates read a paper at the July 20 meeting of the Académie de médecine entitled "Tuberculous Contagion of Children in Infected Families." They said that observation over a fifteen year period in Bezançon's hospital and dispensary service revealed cases of children who, although exposed in their homes to prolonged contact with tuberculous parents, not only failed to present any clinical or radiologic evidence of the disease but also never had a positive skin reaction to tuberculin. The histories of ten families, of from five to eight children each in which one or both parents were tuberculous, observed for from ten to fifteen years, were cited. In only twenty-two of thirty-six children was the skin reaction markedly positive from the time at which it was first made. In six cases it remained constantly negative and in ten cases the reaction suddenly changed from negative to positive, although exposure to the disease had existed for years. The persistence of negative reactions, in spite of prolonged, close and constant contact with tuberculous parents in very unhygienic surroundings again shows the complex nature of the problem of the etiology of tuberculosis. The law of age could not be invoked in the cases observed by the authors. There appear to be some secondary factors, such as digestive disturbances, climatic and seasonal influence, psychic and moral causes, concerning which much remains to be learned.

A paper entitled "Significance of Negative Cutaneous Reactions to Tuberculin" was read by one of Bezançon's associates, who studied 105 children in fifty-three families in which one or both parents were tuberculous. Of the 105 there were negative reactions in seventy-two and positive in thirty-three. A number of cases were cited in which, although all the children had been equally exposed, some, in the same family, had positive and others a negative reaction. In many, the negative reaction changes suddenly to a positive one after an interval of from four to fifteen years. This is frequently seen in students and nurses who work in wards for cases of pulmonary tuberculosis. The problem of why such a sudden change of reaction occurs still requires study.

The discussion was opened by Professor Guérin of the Pasteur Institute, who said that the observations of Bezançon and his associates seemed to set up the theory that in the human race there was an initial period of infection which might be termed "preallergic," of long duration and without a positive tuberculin skin reaction. Professor Marfan defended the value of the epidermal tuberculin test. He had always found lesions when it was positive. Professor Rist stated that he did not believe that any evidence presented so far should lessen confidence in the value of the tuberculin epidermal and dermal tests. Professor Debré maintained that an anteallergic period could exist for some length of time, but it did not seem plausible for a person to be a carrier for years and not to react to increasingly stronger doses of tuberculin, in the form of cutaneous reactions.

Cutaneous sensibility to tuberculin ought to be tested, vigorously but cautiously, before being considered negative. Until more proof was offered, his faith in the tuberculin skin tests would remain unchanged. Professor Lesne expressed confidence in the positive epidermal reaction as signifying the existence of an unquestionable contamination. In closing, Professor Bezançon said that he did not wish to be understood as questioning the value of the cutaneous reactions but he said that it was advisable to search for certain factors which cause them to appear very late or which give rise to anteallergic periods.

International Congress of Public Health Officials

The International Congress of Public Health Officials, organized by the French Public Hygiene Society, will be held in Paris, October 20-21. Papers will be read by public health officials of various countries on the role which they should play in modern society.

AUSTRALIA

(From Our Regular Correspondent)

Aug. 24, 1937

Epidemic of Poliomyelitis in Victoria

During the past three months an epidemic of poliomyelitis has been slowly spreading in an area of about 15 miles in width in the suburbs of Melbourne, Victoria. So far there have been forty-seven cases with five deaths. There is evidence that the epidemic is of a widespread scattered nature throughout the state. An effort is being made to limit the spread by imposing restrictions on interstate travel, especially of children. A medical committee controls the joint government and municipal campaign against the disease, and seventy-four state schools have been closed. In view of the state of flux through which the treatment of the disease is passing, it is interesting to note the public statement which the medical committee has issued to the inhabitants of the infected area. "At present there is great doubt amongst world authorities as to the value of convalescent serum in the treatment of poliomyelitis as hitherto and at present employed. This doubt is supported by experience in the present epidemic. Serum, however, is at least harmless and, as there is no other form of treatment available, and it is possible that a more potent serum may be developed, the committee feels that the collection of serum should be continued until more definite knowledge is available. With regard to the use of nasal sprays, the committee feels that, in view of the inconclusive results of a trial of the picric acid-alum spray in a large epidemic in America, it is not yet in a position to recommend the general use of such a spray. Any persons who wish to adopt this method should do so under medical advice. The committee considers that the intramuscular injection of citrated blood from parents to children who are known to have been in contact with a case may help to avert an attack and would be harmless. Closure of schools can be a useful measure only if parents ensure that their children are strictly isolated in their homes for at least one month."

The Future of Medical Practice in New Zealand

Medical practice in New Zealand is at the crossroads. The government has the ambition of providing a complete health and medical service for the people of New Zealand whereby the best possible service is available, free of charge, to all members of the community irrespective of their financial situation. The government desires to give every citizen sound physical health and a longer expectation of life through free advice and treatment from the best doctors available. As one member of the government, Dr. T. G. McMillan, the member for Dunedin West, expressed the government's ambition: "We do not want a medical service geared by the poor man's pocket, but we want the best available to every one in the dominion." He further stated that it was hoped to improve the personal relationship between patient and doctor by removing the general

cause of irritation between them—the fee. It is considered that this has been an economic barrier which has been responsible for the tragic failure to prevent incurable disease. The New Zealand branch of the British Medical Association, through its president, Dr. T. D. M. Stout, has stated that it would act in the fullest cooperation with the government. But at the same time the association is doubtful whether any scheme embracing a large section of the community is either necessary or desirable. Adequate provision, however, with a full health service, should be made available to people not able to make financial provision for it themselves. The government has stated that it does not contemplate any scheme which will react detrimentally on the profession as regards either its earning or its professional standard. The British Medical Association considers that the development should be of an evolutionary nature and that it should start with the class of people of the lowest income groups, with the possible addition of other sections of the people as the scheme develops.

A special committee, consisting of members of parliament and department officers has been appointed by the government, and this committee is examining all aspects of health insurance. An opportunity will be provided for interested parties to appear before a select committee of the House of Representatives to make any further suggestions or recommendations they wish to do. To assist in the preparation of a satisfactory scheme of national health insurance, Sir Henry Brackenbury is coming to New Zealand on the invitation of the New Zealand Branch of the British Medical Association and will arrive early in September. Sir Henry Brackenbury, who was a noted British authority on the medical aspect of national health insurance, will spend about three months in the dominion. At present the public hospitals of New Zealand are maintained by government subsidies, by local taxes and by patient's fees, but these charges are not nearly sufficient to cover the cost of maintenance and a large proportion of the patients who receive either inpatient or outpatient treatment pay nothing at all. It is significant that the "means" test for outpatients at the Wellington Hospital has been abolished. According to the hospital act, and to the practice of the controlling authorities of the larger hospitals the wards of public hospitals are open to all classes of the community, rich or poor alike.

Great building schemes are in contemplation. It is considered in New Zealand that £1,250 is nowadays by no means too large a sum to spend on the capital cost of a bed in a public hospital. The hospitals are developed to a high state of efficiency as regards equipment, with a corresponding increase of expenditure to a degree not originally contemplated. Maintenance increases have resulted from the adoption of the forty hour working week, which has been ordained by the present government, and wages have been considerably increased. In the Wellington Hospital, for instance, last year's expenditure in salaries and wages was £62,448 and this year it will be greatly increased, for the items of the wages of the male attendants alone in the hospital has increased by 40 per cent in the hospital board's estimates.

THE ECONOMIC ASPECT

The population of New Zealand, including Maoris, at the last census was rather more than one and a half million. It is proposed to pay doctors at the rate of £1 per head annually as a retainer. All materials and other expenses will be absolutely free to patients and will be paid for by the government. It is estimated that the cost of the health scheme contemplated by the government is three and a half million pounds annually. This would be equivalent to a tax on wages, and on income other than wages, of seven pence in the pound. If the population was distributed among the medical practitioners, each doctor having his own list, there would remain a sum in the vicinity of two million pounds for extra services. It is believed that the proposal involves free medical and nursing service in

maternity cases, involving from fifteen to twenty pounds in each case. This would require about another half million pounds. The scheme would provide also for special hospital attention, traveling expenses of doctors and patients, and the provision of special homes and hospital staffs.

At present the burden on taxpayers for hospitals and for all local, municipal and borough services is inequitable. It seems that the increasing cost of hospitals in New Zealand is extravagant. Paying wards in hospitals are said to be undemocratic. Experience has shown that original estimates of hospital and other costs for medical services cannot be made proof against increasingly mounting expenditure, and there is a feeling that a stage of expansion will be reached when even a state with all its powers of taxation will find its financial burden too great to bear. The tendency toward the abolition of honorary staffs, and the substitution therefor of paid full time or part time surgeons and physicians, will itself mean a large increase of expenditure. Four large metropolitan hospitals at present require new treatment machines for high voltage roentgen therapy. This is estimated to cost £36,000.

It is considered that the complete nationalization of public hospitals will be the inevitable outcome of the government in its attitude toward medical services. At present in New Zealand the state pays the whole cost of schools, and the education system generally, from taxation funds. And the same principle is intended to apply to medical service. There is a marked socialization trend in New Zealand today. Ownership of property has become extensively socialized with the system of state lending for homes on a very narrow margin of security, with the result that the average wealth of taxpayers is very low. The tax burden, moreover, apart from the cost of maintenance of hospitals, has increased with the development of other social services and schemes of municipal progress.

BUDAPEST

(From Our Regular Correspondent)

Sept 9, 1937

Consumption of Food Contaminated with Poison Gases

Dr Albert Telbisz, captain in the medical corps of the Hungarian army, in a recent lecture before the Royal Medical Society said that with regard to the consumability of food articles containing war gases one must pay attention to its water content. In general war gases penetrate deeper in foods containing much water, therefore foods containing much water retain the characteristic smell of the gases and for this reason they are unsuitable for human consumption. Phosgene, which speedily disintegrates and loses its action, at the worst merely spoils the taste of the food, rendering it less enjoyable. Real danger is caused only by the consumption of foods soiled with mustard gas or mixtures containing arsenic and chlorpicrin, which are insoluble in water. The flesh of a recently slaughtered animal takes up much more from mustard gas than cooled or frozen meats. Also milk, owing to its fat content, may retain a greater quantity of mustard gas in solution through a much longer time, without the decomposition of the mixture. Mustard gas can penetrate into the flesh of an unpeeled apple to a depth of from 3 to 5 mm, while the skin of oranges and lemons gives a natural defense. On the surface of the potato gases spread quickly and penetrate deeply. At the site of the absorption in the whitish inner part of apples and potatoes sharply delineated brown spots of characteristic odor occur.

Gas-proofing methods for food articles are yet undeveloped. Sure prevention can be obtained only by strictly forbidding the consumption of contaminated water and destruction of soiled food. Water can be saved by keeping it in reservoirs or covered cisterns. Of course in such a way only small quantities of water can be protected. Foods can be protected by packing them in small quantities in water proof paper or cellophane

or, if the quantity is greater, they can be covered with a water proof material. These protective measures should be resorted to in every case, for it is doubtless easier to protect the foods than to rid them of absorbed gases. Nevertheless, however careful and cautious one is, there may be instances in which food or drinking water has to be rendered gas free. For food the simplest and at the same time cheapest method is thorough ventilation. In a similar way meat or lard containing phosgene can be gas proofed. In such cases gas proofing with diluted soda solutions is superfluous, because this would greatly interfere with the preservation of flesh. The rinsing water of meat soiled with mustard gas and also the soup of the cooked meat must be poured out. The mustard gas suspended in such water can be rendered innocuous by chlorinated lime. If meat has been reached by a quantity of mustard gas spray, or rain, its surface should be washed with soda solution and the upper layer should be cut off with a knife having a wide blade to a depth of half an inch. Soaking the meat in a solution of potassium permanganate, from 3 to 5 per cent, as suggested by several authors, is a doubtful way of gas proofing. With chlorinated lime or its watery solution, gas proofing is much more efficacious, but in practice this method has not proved satisfactory because the meat absorbs the characteristic odor of chlorine and renders it distasteful. Meat cannot be efficaciously gas proofed by fumigation either. If meat has been reached by enough mustard gas to cover its whole surface it has to be destroyed. If only the vapor of mustard gas has reached the meat, thorough ventilation suffices to render it edible. Dr Telbisz concluded by stating that the selection of the proper method for gas proofing is not easy but is important, because in time of war there is a scarcity of foods.

Serving of Wine Obligatory in Restaurants

To serve the interests of wine growers, the government enacted some years ago a regulation that every soldier shall be rationed half a liter of wine daily into two portions, to be consumed with luncheon and supper. Since that law was enforced conditions have not improved but have become worse. To save the wine industry, the government enacted some days ago that in all restaurants the menu shall include a portion of wine, whether the customer wants it or not. As the menu system prevails only in the better class restaurants, this enactment is of no major practical importance. A part of the press strongly condemns this arrangement, especially since in Budapest there are many temperance restaurants. A medical journal ironically remarked that it is fortunate that the government did not enact that school children in place of their free tumbler of milk at 10 a. m., should get a portion of wine.

Work of the Rockefeller Foundation in Hungary

The Rockefeller Foundation made the first step toward rehabilitating the scientific institutes of Hungary in 1920. Since that time \$1,100,000 has been given. In the first years the foundation supplied the deficiencies of the equipments of the universities, which were run down in consequence of the war. In 1925 a public health reform bureau was established to initiate and develop the organization of the so called Green Cross Protection of Family life. In 1925 the Rockefeller Foundation granted money for the erection of the National Public Health Institute. In 1927 support was granted to the erection of the Nurses' Training Institute soon afterwards it helped to erect the Institute for Training Maternity Staff. The help given in the erection of the National Public Health Institute deserves special mention. The foundation rendered the notification of infectious diseases possible and an extensive system of laboratory examinations. This institute initiated the testing of drugs and proprietary medicines, the starting of a systematic campaign against malaria, miners' phthisis, flies, and so on, the organization of prophylactic inoculations against

diphtheria, and the production of vaccines. It has also resulted in more foreign physicians coming to study.

When John D. Rockefeller died, the Hungarian ambassador in Washington laid a wreath on the coffin of the great patron of Hungarian scientific work.

Centenary of Budapest Royal Medical Society

The Budapest Royal Medical Society recently celebrated the centenary of its foundation, on which occasion Tiburtius Verebelyi, professor of surgery at the Budapest University and president of the Royal Medical Society, gave an address. He said that without doubt the last hundred years had seen more medical progress than any other century. From the stethoscope to electrocardiography and roentgenology, from the simple steel scalpel to the electric knife, from the clink of the bladder stone to the cystoscope, from sunlight to radiotherapy are a few of the practical achievements in therapeutics and diagnosis. With the deepening of our knowledge and with the recognition of the importance of cooperation, physicians must concentrate now on solving the present hygienic, social and professional problems.

Personals

Baron Alexander Koranyi, late professor of clinical medicine at Budapest University, received the Honorary Doctorate from the University of Athens on the occasion of the centenary of the foundation of the university.

BUCHAREST

(From Our Regular Correspondent)

Sept 10, 1937

The Ninth International Congress of Military Surgeons and Pharmacists

The Ninth International Congress of Military Surgeons and Pharmacists, under the patronage of King Carol, was held in Bucharest July 2-8 and was opened by Lieutenant General Iliescu in the presence of Costinescu, minister of health, Angelescu, minister of education and the majority of the diplomatic staff. The presidential address expressed thanks to King Carol for his sacrifices in connection with the health of the army and to the royal family for its generosity with regard to the care of the wounded. Speaking about the vocation of the medicomilitary staff, he emphasized that military surgeons need to be possessed of military in addition to medical knowledge. Speaking about the importance of well equipped laboratories, he said that the achievements of laboratories were sooner availed of by the army than by the civilian population. Vaccination against smallpox, for example, was rendered compulsory in the army of Napoleon, May 29, 1811. Inoculations against typhoid likewise were first applied in the armies.

The congress adopted three important resolutions: 1. Certain localities should be utilized exclusively for the medical service and placed under the protection of the Red Cross Society. 2. The application of the Geneva Convention should be introduced within the shortest possible time and its close observance be assured by military service regulations and military law. 3. Increased protection should be allotted to the civilian population so that they may be exempted from the horrors of war.

Colonel Voncken of Belgium said that the convocation of these congresses was inspired by the ideal of peace. If there is no possibility of realizing perpetual peace at least everything possible should be done to humanize war and to mitigate its horrors and atrocities. In this sense it is necessary to establish isolated health centers, to protect these and to establish regulations for the special treatment of the wounded and the civilian population. Committees were appointed which in time of war are to observe that the regulations laid down in international agreement are enforced.

The international character of the congress was shown by the fact that among the lecturers were Rumanians, Italians, Japanese, Swiss, Greeks, Dutch, English, Russians, French,

Americans, Germans and Yugoslavs. The scientific papers were read in the afternoon hours, while the forenoons were utilized for the inspection of Bucharest's public health institutions.

Congress of Sport Physicians

The first Congress of Sport Physicians was held in Bucharest. The first speaker was Kral, lecturer to the University of Prague, who made known the function of his professorial chair, the aim of which is to make students of medicine know the various problems which surround physical education. Professors Mihailescu and Alexiu expounded the importance of the medical control of physical education among university students and those youngsters who partake in so called premedical training. They showed a minutely elaborated plan for the institutional organization of the training of sport physicians. Lascar, colonel in the medical service, and Jonescu dealt with the teaching of sports needed by those suffering from bodily defects. They emphasized the importance of this from the point of view not only of the upkeep of their health, which is impaired by their deformities, but of the improvement that can be brought about by properly applied sports and exercises, under the control of competent sport physicians. Professor Dumitrescu told of his plan for a biotypologic institute along the lines of physical education. He also expounded the practical realization of this plan. Alexiu and Demetrescu illustrated with numerous examples the importance of the medical control of the gymnastic exercises of sport associations. Ulmeanu proposed the organization of physicians dealing with physical education into a society and suggested that the career of sport physicians be regulated according to certain norms. He said that of late years it has been the fashion to have children taught physical culture, mostly by teachers who are self taught and who may do harm by incompetent teaching. Professor Knoll of Hamburg read a paper on factors promoting accidents from sports, Professor Cassini of Rome, a paper on accidents from sports which occurred in Italy during the last decade, Professor Laugier of Paris a paper on biotypology and physical education, Professor Brouna of Liege, a paper on acceleration in function of the heart in connection with physical culture, professor Arnold of Dresden, a paper on physical education as a therapeutic means in certain disease conditions, Professor Nitescu, a paper on the metabolism of creatine bodies in reference to the training of the body, Gontea, a paper on lacticidemia in connection with the training of recruits.

The Celebration of Professor Marinescu

In celebration of Marinescu's laying the foundation of the teaching of neurology in Rumania forty years ago, the *Noua revista medicala* published a bulky commemorative issue. The most prominent professors of the Rumanian universities and some of his most celebrated pupils contributed articles.

Marriages

ROSCOE BENNETT GRAY COWPER, Big Springs, Texas, to Miss Mary Joy Odom of Denton, June 21.

FERDINAND WELEBR, Washington, D. C., to Miss Berta Hanson of Rolla, Mo., July 28.

WILLIAM RIBBLE PRETLOW to Miss May Fletcher Tiffan, both of Warrenton, Va., July 24.

WILLIAM EGBERT KREWSON, 3d, to Miss Mary Elizabeth Britz, both of Philadelphia, June 19.

WILLIAM M. CASHMAN to Miss Ella Harrington, both of Warren, Pa., July 19.

RALPH MARTIN TIDD JR., to Miss Mary Frances Good, both of Erie, Pa., April 7.

SEYMOUR ZUCKER to Miss Cynthia Prince, both of New York, May 23.

ROSELYN TOUFF to Mr. Elias L. Epstein, both of Cincinnati, April 29.

Deaths

Lorenzo B Lockard, Denver, University of Pennsylvania Department of Medicine, Philadelphia, 1894, member of the Colorado State Medical Society, American Academy of Ophthalmology and Oto-Laryngology, American Laryngological Association, and the American Laryngological, Rhinological and Otological Society, at one time professor of anatomy at the Toledo Medical College, laryngologist and rhinologist to the Sanatorium of the Jewish Consumptives Relief Society, Spivak, and the Evangelical Lutheran Sanatorium, Wheat Ridge laryngologist to the National Jewish Hospital, on the staff of St Luke's Hospital fellow of the American College of Surgeons, aged 64, died, July 31, in St Joseph's Hospital, of intestinal rupture

Julius Henry Powers ♂ Saginaw, Mich, University of Michigan Department of Medicine and Surgery Ann Arbor, 1906, for many years councilor of the eighth district of the Michigan State Medical Society, fellow of the American College of Surgeons, served during the World War, past president of the Saginaw County Medical Society on the staffs of the Saginaw County Contagious Hospital, Saginaw General Hospital, St Luke's Hospital and St Mary's Hospital, aged 57 died, July 19, of carcinoma of the intestine

John Taylor Howell ♂ Newburgh, N Y College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885, fellow of the American College of Surgeons, past president of the Orange County and Newburgh Bay medical societies, consulting surgeon to St Luke's Hospital, librarian to the Newburgh Medical Library, aged 75, died, July 9, of injuries received when struck by an automobile

Samuel Ernest Lambert ♂ Spokane Wash, Medical Department of the University of Alabama, Mobile, 1901, member of the House of Delegates of the American Medical Association in 1920 and 1921, fellow of the American College of Surgeons, served during the World War, member of the staffs of the Deaconess St Luke's and Sacred Heart hospitals, aged 62, died, July 23, of coronary thrombosis

Arthur Lampton Haight, Crystal Falls Mich, Milwaukee Medical College, 1912, member of the Michigan State Medical Society, past president of the Dickinson-Iron County Medical Society, served during the World War, for many years a member and treasurer of the board of education, medical superintendent and owner of the Crystal Falls General Hospital, aged 58, died, July 20

Clarence Allen Good, St Joseph, Mo University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898, member of the Missouri State Medical Association at one time professor of bacteriology and pathology at the Ensworth Central Medical College, on the staff of St Joseph's Hospital, aged 61, died, July 20, in Rochester, Minn, of carcinoma of the prostate

Josiah Payne Thornley ♂ New York University of Virginia Department of Medicine, Charlottesville 1887 Columbia University College of Physicians and Surgeons, New York, 1896, connected with the U S Public Health Service, on the staffs of the U S Marine Hospital and the Gouverneur Hospital, aged 70, died, July 21, in the Presbyterian Hospital, of bronchopneumonia

Clarence Leroy Bock ♂ Muncie, Ind, Indiana University School of Medicine, Indianapolis 1915, past president of the Delaware-Blackford County Medical Society and the Muncie Academy of Medicine, served during the World War fellow of the American College of Surgeons, aged 51, urologist to the Bill Memorial Hospital, where he died, July 24, of coronary thrombosis

Mathew Lyle Talbot ♂ McAllen, Texas, Vanderbilt University School of Medicine Nashville, Tenn, 1900, past president of the Tarrant County Medical Society on the staff of the McAllen Municipal Hospital, formerly on the staffs of the City and County Hospital, All Saints Episcopal Hospital and St Joseph's Hospital, aged 62, died, July 10, of coronary occlusion

Paul Alexander Quick, Muskegon, Mich University of Buffalo School of Medicine, 1874 member of the Michigan State Medical Society, past president of the Muskegon County Medical Society at one time city and county physician aged 84 formerly on the staff of the Mercy Hospital and the Hackley Hospital, where he died July 20 of uremia

Claude Alfred Boseman, Pinebluff N C, University of Pennsylvania Department of Medicine Philadelphia, 1927, member of the Medical Society of the State of North Carolina,

served during the World War, part owner of the Pinebluff Sanitarium, aged 43, died, July 23, of acute morphine poisoning

Frank Lee Biscoe ♂ Wadsworth, Kan, Georgetown University School of Medicine, Washington, D C 1901, member of the Medical Society of the District of Columbia, served during the World War, on the staff of the Veterans Administration Facility, aged 60, died, July 18, of pneumonia

Timothy Thomas Gibson, Knoxville, Tenn, University of Louisville (Ky) Medical Department, 1909, member of the Kentucky State Medical Association, past president and secretary of the Bell County (Ky) Medical Society, aged 53, died, July 26, of cerebral hemorrhage

Augustus W Clayton, San Angelo, Texas Louisville (Ky) Medical College, 1892, member of the State Medical Association of Texas, aged 68, on the staff of the Shannon West Texas Memorial Hospital, where he died, July 2, of Parkinson's disease

Horace Bowen, Montclair, N J, New York Homeopathic Medical College and Hospital, 1889, president of the Hudson County Board of Health, at one time health commissioner of Hudson County, aged 70, died, July 13, of arteriosclerosis and chronic nephritis

Bernard Joseph Lachner ♂ Rock Island, Ill, Jefferson Medical College of Philadelphia, 1906, fellow of the American College of Surgeons, served during the World War, on the staff of St Anthony's Hospital, aged 59, died, July 1, of cerebral hemorrhage

Charles J Otto, Dayton, Ohio, Eclectic Medical Institute, Cincinnati, 1905, member of the Ohio State Medical Association formerly county coroner, aged 57, died, July 26 in St Elizabeth Hospital, of streptococcal meningitis, otitis media and pneumonia

Edward Ernest Parker, South Bend, Ind, Medical College of Indiana, Indianapolis 1898, member of the Indiana State Medical Association, formerly surgeon to the Culver Military Academy, Culver, aged 66, died, July 28, of cerebral hemorrhage

Alfred Frederick Hodgman, Auburn, N Y, Albany (N Y) Medical College, 1888, member of the Medical Society of the State of New York, veteran of the Spanish-American War, county coroner, aged 71, died, July 12, of lymphatic leukemia

Charles George Strobel, Dolgeville, N Y, Long Island College Hospital, Brooklyn, 1888, for many years health officer member of the Medical Society of the State of New York, aged 73, died, July 16, of cerebral hemorrhage and arteriosclerosis

William A Bernard, Woonsocket, R I (licensed in Rhode Island in 1899), formerly health officer of Woonsocket, on the staff of the Woonsocket Hospital, aged 62, died, July 11, of cerebral hemorrhage, hypertension and arteriosclerosis

John Patrick O'Brien ♂ Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1910, served during the World War, aged 54, on the staff of the Misericordia Hospital, where he died, July 20, of lobar pneumonia

William L Murphy ♂ Aurora, Ill, Northwestern University Medical School, Chicago 1903, on the staffs of St Joseph Mercy Hospital and St Charles Hospital, aged 58, died, July 25, of angina pectoris

Frederick S Haeberle, St Louis St Louis College of Physicians and Surgeons, 1891, member of the Missouri State Medical Association, aged 70, died, July 14, in the Barnes Hospital, of heart disease

Frederic Henry Moss, Detroit, University of Minnesota Medical School, Minneapolis 1928, resident physician of the Detroit Tuberculosis Sanatorium, aged 39, died, July 26, of chronic myocarditis

Monroe Manges, Buffalo, Cleveland Medical College, 1892, University of Buffalo School of Medicine, 1898, aged 71 died, July 23, in the Buffalo General Hospital, of cerebral thrombosis and arteriosclerosis

Henrietta A Stoffregen Borck ♂ St Louis St Louis Woman's Medical College 1893, Homeopathic Medical College of Missouri St Louis, 1897, aged 68, died, July 24, of cerebral hemorrhage

Eugene G Greer, St Louis, St Louis College of Physicians and Surgeons, 1906 member of the Missouri State Medical Association, aged 57, died July 26, of cerebral hemorrhage

William Wellington Owen, Wading River, N Y, University of the City of New York Medical Department, 1891, aged 79, died, July 11, of chronic nephritis and myocarditis

Correspondence

INCIDENCE OF CORONARY THROMBOSIS IN RELATION TO CLIMATE

To the Editor—The observation has frequently been recorded that the incidence of coronary thrombosis is apparently increased during the cold seasons. In this connection the report by Master, Dack and Jaffe on "Factors and Events Associated with Coronary Artery Thrombosis" (*THE JOURNAL*, August 21) is of particular interest. These investigators analyzed more than 800 clinical attacks of coronary thrombosis in an attempt to ascertain "what factors may have initiated the thrombosis."

Excitement, ingestion of food, infection, tobacco, alcohol, heart failure, time of day and season of year were found to have no significance. Since the observation with reference to season of year is of some importance from the standpoint of both etiology and therapy, I have analyzed the data presented by Master and his associates.

They divided the monthly incidence of 612 attacks of coronary thrombosis into two groups. The October-April or "autumn-winter," group comprised 314 cases, or 51.3 per cent of the total, and the April-October, or "spring-summer," group consisted of 298 cases, or 48.7 per cent. On the basis of these two frequencies the conclusion was reached that "the element of cold therefore seems to have no role in the formation of a coronary thrombus," and again, that "coronary thrombosis occurs irrespective of season or temperature."

When, however, a slightly different division of the published data is made, a wholly different conclusion results. Retaining the dichotomous classification of the authors, I considered two groups: cases occurring during the winter-spring months of December through May, and those noted during the summer-fall months of June through November. The following totals were obtained: winter-spring, 333 of 612 cases, or 54.4 per cent, and summer-fall, 279 cases, or 45.6 per cent. The difference between these two values of 54.4 and 45.6 per cent is 8.8 ± 2.84 per cent. Since the difference is three times as great as its standard error, from a statistical point of view it is highly significant. Such a difference would be expected to occur by chance selection from a homogeneous population about once in 370 times. An alternative analysis of the same groupings by the chi square test of homogeneity gives a value for chi square of 9.5, indicating highly significant heterogeneity between the two groups. Furthermore, the mean of fifty-one attacks per month was exceeded in three of the six winter-spring months of December to May, with an average deviation from the mean of +4.5, while five of the six summer-autumn months of June to November had an attack rate lower than the mean value, the average deviation in this instance being -4.5.

Another significant observation is brought to light from the published material. The mean number of attacks per month based on the total rate of 612 cases is fifty-one and the standard deviation of monthly incidence is ± 9.5 . Ninety-nine per cent of all values in a symmetrically distributed series are expected to fall within the range of the mean plus and minus two and a half times the standard deviation in this case between the extremes of 26 and 75. The attack rate in every month but one falls well within these limits. The exception occurs in the month of January, a cold winter month which attains the upper limit of this range with a frequency of seventy-five attacks. Statistically this deviation from the mean is regarded as significant.

The foregoing analysis indicates that the onset of coronary thrombosis in the cases reported by Master and his associates was significantly more frequent in the period from December to May than in the period from June to November. Moreover, the factor that contributed most to the increased incidence during the winter-spring months was the significantly high rate

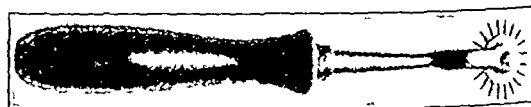
occurring in January. The extraneous influence of temperature, hours of sunshine and meteorological states, which might be at least partly responsible for this differing incidence, is at present a matter for conjecture. The fact remains however that the reported material points to season of the year as a significant factor in the occurrence of the clinical picture of coronary thrombosis.

PAUL D. ROSAHL, M.D., New Haven, Conn.

A PINWHEEL FOR NEUROLOGIC EXAMINATION

To the Editor—In *THE JOURNAL*, July 31, page 346, Dr. E. L. Stern describes an instrument for localizing pain. This instrument was introduced by me in Germany in 1930 (*Arch. f. Psychiat.* 92:474, 1930; *Nervenarzt*, 1930, p. 594; *Bing Lehrbuch der Nervenkrankheiten*, ed. 4, 1932, p. 8) and has been since widely used in Europe. This small instrument has proved during these eight years to be of such definite value that it has become, like the reflex hammer, an indispensable part of the outfit for everyday neurologic practice.

In testing the sensibility of the skin to pain, both for the first gross orientation and for exact determination of the boundaries of hypalgesia or analgesia, it is essential to apply on an extensive area of the skin a series of stimuli which should be as much as possible equal with regard to time, distance and strength. Ordinarily a pin was used for this purpose, but the



Pinwheel for neurologic examination

equality of applied stimuli can be better achieved by a pinwheel which is constructed in the same manner as a copying wheel as used by tailors.

The handling of this pinwheel is easy and convenient. It is rolled under light pressure on the skin or permitted to work with its own weight. It is also useful for comparison of sensibility to pin prick on two symmetrical places of the body. In this manner it is easier to achieve equal stimuli. The use of a pin is, however, preferable for determination of hypalgesic or analgesic boundaries on the small surfaces of the ends of the extremities.

This pinwheel has proved in many years' experience to be useful in the examination of skin reflexes, particularly the abdominal reflexes. In using a pin for this purpose or another sharp instrument, as was done before, painful scratches of the patient's skin often occur. I was often amazed to see how severely the skin of the patient's abdomen can be scratched when the doctor had been "struggling with abdominal reflexes" as my teacher Dr. Cassirer indignantly used to say. Another disadvantage of using a scratching motion for abdominal reflexes is that in this way a shaking of the abdominal wall may be produced which simulates a contraction of the abdominal muscles. Both disadvantages can be avoided by examination of the abdominal reflexes with a pinwheel, which is quickly rolled over the abdomen under light pressure. I have found frequently and very definitely that abdominal reflexes which could not be elicited by using a pin or a sharp instrument could be found clearly by use of the pinwheel. In the latest edition of his *Lehrbuch der Nervenkrankheiten*, Bing (1937) says in the discussion of hyporeflexia and areflexia abdominalis, page 171: "When weak stimuli fail, the abdominal reflexes can certainly be brought to light by the use of the 'pinwheel' recommended by Wartenberg."

ROBERT WARTENBERG, M.D.
University of California Hospital,
San Francisco

THE RECURRENT (INFERIOR) LARYNGEAL NERVES

To the Editor—In THE JOURNAL, September 4, you published a communication from Dr John F Quinlan criticizing the following statement which appeared in your editorial (July 17) on total thyroidectomy for congestive heart failure "Injury to the recurrent laryngeal nerve was recorded in 82 per cent of the cases. In no instance was it bilateral or permanent." Contrary to his criticism, this simple and concrete statement of fact contains no "gross anatomic ambiguity" nor is there, "by implication, a definite falsehood." Moreover, the BNA does recognize the recurrent laryngeal nerve and gives it the simple Latin designation 'nervus recurrens'.

Furthermore, his assertion that "there is only one recurrent nerve in the body" is erroneous. There are two recurrent laryngeal nerves and also two recurrent mandibular and recurrent maxillary nerves to say nothing of the many other recurrent meningeal nerves.

According to Dr Quinlan, there is no right recurrent laryngeal nerve and he attempts to explain the asymmetry. This assertion is likewise false, since the right recurrent laryngeal nerve arises from the vagus and hooks around the subclavian artery (at the base of the neck) and ascends in the groove between the trachea and esophagus, to reach the larynx finally. Hence the right and the left recurrent nerves have practically the same course in the neck and thus have a similar relation to the thyroid gland and either may be injured in operations on this gland.

His final statement concerning "thoracic diseases involving the mediastinum—infections, growths, aneurysms" is irrelevant to your discussion of thyroidectomy. It is of course evident that only the left recurrent nerve—which hooks around the aorta—enters the thoracic cavity, since the right one hooks around the right subclavian artery, which lies above the thorax—in the neck.

M WHARTON YOUNG, M D,
Howard University,
Washington D C

INTESTINAL OBSTRUCTION FROM DRIED FRUIT

To the Editor—The report of a case of intestinal obstruction, caused by the ingestion of half of a dried peach, which, swallowed unchewed, passed undigested into the small intestine completely occluding the lumen of the bowel, is of great interest. This patient of Drs Andrews and Walker of Great Falls, Mont., (THE JOURNAL, August 7) is probably not an isolated case.

In the forenoon of April 25, 1934, I was called to see an obese edentulous woman, aged 70, who had had severe abdominal pains all through the night. Great distention, fecal vomiting, fever and a very rapid pulse made the diagnosis of intestinal obstruction imperative. She was admitted to the hospital and an attempt was made to improve her desperate condition, but she died in a few hours. Myocardial degeneration and chronic nephritis barred an operation and contributed to the outcome.

The postmortem examination disclosed a fusiform swelling at about the middle of the small intestine, which on being incised proved to be the two complete halves of large dried peaches, undigested and swollen again to their original fresh forms, lying one above the other and in contact, the convex surfaces turned in opposite directions, completely obstructing the bowel. These halves were firm, the indentation in the middle showing the perfect convolutions where the stone had been removed, and the skin was rather smooth and firm.

The patient had been stewing peaches the day before and, placing some dried pieces in her mouth merely moistened them with saliva, sucked them a bit and swallowed them unchewed, as she was not wearing her plates.

The lesson is plain: dried fruits unsoftened and unchewed cannot be swallowed with impunity. Even when chewed, a mass may form and cause trouble, but in view of the fact that large peaches are now dried, after being only halved, it is evident that they constitute a menace for those who might ingest them in the dried state, this is especially true in the case of children and the edentulous.

ALEXANDER NETTELROTH, M D, Louisville, Ky

JACKSON AND JAMES PAGET

To the Editor—It is pleasant to find this letter of James Jackson (1777-1867) addressed to Sir James Paget in the collection of the Royal College of Surgeons. Jackson is still remembered by his Letters to a Young Physician (1855) and his early scientific work on vaccination in the United States. The letter is revealing of his day and also shows that he never lost contact with the British medical world.

Boston 22 Sept 1855

Sir

I take the liberty of sending two books of which I beg your acceptance. If you will look into them you will find I am an old man. You will perceive deficiencies enough but you may perhaps perceive in me a love of what is true and beautiful in science. My principal object in forwarding you these books is to get an opportunity to express my feelings of respect to you. This I have been desirous to do for a year past—since reading your lectures on surgical pathology.

In reading these lectures I was constantly reminded of John Hunter. It seems to me that no one in these fifty odd years since his death has shown the same spirit in studying and interpreting nature as you have done. His love and close observation of nature were such that all his labours retain their value even on points where others with greater opportunities have gone far beyond him.

So far his fidelity is justified—his fidelity in observation. But in many instances may it be found that in looking closely at what he did see he anticipated what subsequent discoveries have confirmed. This could be shown to be more true than it would appear to be at first view if his language were correctly explained. For instance he spoke often of actions in different parts in such terms so that his readers have thought of some peculiar kinds of motion in the extreme aspect.

He then delivers a eulogy of Paget and hopes that he lives to make new conquests.

"Conquests which do not break down and destroy God's works, but of which the object is to remove the obstacles to a right interpretation of the works of creation—of the plans of the Deity and of the laws he has ordained."

R H HEINDEL, Philadelphia

CEVITAMIC ACID STIMULATION OF SPECIFIC ANTIBODY FORMATION

To the Editor—I have read with great interest the editorial on "Cevitamic Acid Stimulation of Specific Antibody Production" in THE JOURNAL, August 28. Unless I am mistaken, Dr Bernard L Oser and I were the first to report that cevitic acid, when administered in sufficient dosage, altered the immunologic responses in guinea-pigs. We demonstrated the fact that larger doses of cevitic acid reduced and inhibited the susceptibility of the guinea-pigs' skin to experimental sensitization with neoarsphenamine, and that the dose necessary to achieve this effect was higher than the minimal dose necessary to protect against scurvy. The publication by Oser and myself, which appeared in the *Proceedings of the Society for Experimental Biology and Medicine* (32:716 [Feb] 1934) is as far as I have been able to ascertain, the earliest report of experimental work dealing with the influence of cevitic acid on immunologic mechanisms. This report was amplified in our presentation before the thirteenth International Physiologic Congress at Leningrad in 1935. Our results have since been confirmed by Bruno Streitmann and Albert Wiedmann (*Arch f Dermat u Syph* 175:696 [July 6] 1937).

MARION B SULZBERGER, M D, New York

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

CEREBRAL VASCULAR SPASMS

To the Editor—Nov. 24 1936 a man aged 48 weighing 156 pounds (71 Kg) without coat or shoes and 5 feet 8½ inches (173 cm) in height was taken with numbness and tingling in the right side of the face which was followed by paralysis of the right side of the face. The paralysis did not affect the brow or the muscles around the eye the principle evidence of paralysis being around the angle of the mouth. Previous to this attack the patient had six or eight attacks of numbness in the right side of the face and in the thumb and the index and middle fingers of the right hand which affected speech if he was talking but were transitory and passed off within a minute or two leaving no paralysis. The blood pressure has varied from 130/98 to 124/87. The patient has a reddish bronze color of the face and back of the hands and is of the hypersensitive type with vasomotor instability. The pulse varies from 80 to 96 lying down. The basal metabolism was plus 27. Blood calcium was 11.2 mg per hundred cubic centimeters, blood urea 24 mg and blood sugar 127 mg. Hemoglobin was 95 per cent. Red blood cells numbered 4 750 000 white blood cells 10 500. The Wassermann reaction was negative. The urine showed a specific gravity of 1.026 a very faint trace of albumin and no sugar. Microscopic examination showed from 15 to 20 white blood cells to a high power field and no red blood cells. Expressed secretion from the prostate (in urine) showed 40 white blood cells to a high power field and 3 red blood cells the specific gravity being 1.022. Physical examination showed dilated veins in the fundi of the eyes. Deep and superficial reflexes were hyperactive and equal on the two sides. Abdominal reflexes were present and equal. No Romberg Babinski Oppenheim Chvostek's or Trousseau's sign was elicited. The pupils were equal and reacted to light and in accommodation. Flexion and extension of the limbs was normal. There was a slight sagging of the tissues around the right angle of the mouth. The patient could pucker the lips normally. The prostate was not enlarged. The heart lungs and abdomen were normal. There was slight enlargement of the left lobe of the thyroid. After five days the paralysis around the angle of the mouth had improved but weakness was apparent on talking and there was some speech defect. The patient's diet was questionable as it is thought it lacked citrus fruits green vegetables and fresh meats. One quart of milk was taken daily. It was thought that the patient's paralysis was due to a small leak in a blood vessel. Three dead or suspicious teeth were extracted. A preparation of theobromine and phenobarbital was ordered and I expect to try small doses of compound solution of iodine from 1 to 3 drops three times a day if advisable. A nap in the afternoon and a balanced diet were ordered with prostatic massage once every five days. Is this treatment suitable and ample? Is there danger in giving compound solution of iodine? Could this condition be due to functional derangement or to the toxic effect from the thyroid or an unbalanced diet? Do these infected prostates get well and stay well from massage? Would it be advisable to operate in such a thyroid case and if so how long after the attack? Would x-rays be preferable to surgery? Does recurrence of the numbness that preceded the attack of paralysis mean that bleeding continues? Does the increase in urea nitrogen with the rather high specific gravity justify protein restriction? What is the protein carbohydrate or fat content of powdered brewers' yeast? Please give suitable treatment for such a case and give the prognosis.

M D Virginia

ANSWER—Transient sensory or motor paralyses such as described are quite common, especially in the later decades of life and are usually attributable to cerebral vascular changes which are at first reversible but nearly always eventually become permanent. The theory that they are due to vascular spasm is widely but not unanimously held. Kinnier Wilson for instance suggests (*Brit M J* 1 487 [March 16] 1929) that they may be due to a temporary fall in systemic blood pressure which renders a partially sclerotic vessel unable for the time being to supply adequate amounts of blood. Arterial hypertension is frequently found in patients with such transient cerebral phenomena. In the case cited, though the blood pressure is not markedly elevated there are other suggestions of vascular disease in the blood urea and urinary observations. In addition it is stated that vasomotor instability was noted an observation consistent with the idea that the patient's cerebral symptoms are due to intermittent vascular changes. Such patients in most instances finally fall victim to cerebral thrombosis rather than to hemorrhage. Syphilis is sometimes a factor in producing these changes and should be further excluded by an examination of the spinal fluid.

A single basal metabolic rate estimation of plus 27 in the absence of other evidence of hyperthyroidism calls only for a repetition of the test and does not warrant the administration of iodine, especially at the age of 48, when it may indeed be dangerous. In the patient under discussion the blood pressure quoted makes hyperthyroidism unlikely.

In the treatment of such a patient the diet should be well balanced and slightly laxative, with an average protein content. Constipation should be treated by the use of lubricant if necessary, in order to avoid any straining at stool. Tobacco should be forbidden or greatly restricted, depending on the patient's existing degree of addiction. Strenuous exercise is to be avoided, as are excitement and emotional stress. Potassium iodide may be administered in doses of 0.65 Gm three times a day temporarily while the facial weakness persists. The bromine or similar compounds are indicated in moderate doses. The prognosis in the case cited is difficult to state without prolonged observation but should be regarded as dubious since most patients with such symptoms die of cerebral thrombosis within a few years. The patient should however, be spared the extra burden of such a gloomy outlook, although responsible relatives may well be warned.

A good grade of brewers' yeast contains about 46 per cent protein, 40 per cent carbohydrate and 2 per cent fat.

OSTEOCHONDRITIS OF FEMORAL EPIPHYSIS

To the Editor—A 3 year old girl had bloodless reduction of the hip in May 1936 with good results but the head of the femur shows (last 10 months) osteochondritis with a mottled head. What should be done in this condition?

L J SVETLIK M D Cleveland

ANSWER—Osteochondritis of the capital femoral epiphysis is seen not infrequently after the bloodless reduction of a congenital dislocation of the hip joint. It is probably due to the traumatism attendant on the manipulation. No pathologic evidence has been adduced to support the theory of diminished blood supply through injury to the artery in the ligamentum teres, but this theory seems at least as logical as any of the others.

The actual pathologic process is a softening of the trabeculae in the capital epiphysis. This softening extends in most cases into the metaphysis. The mottled appearance, sometimes called fragmentation, is due to retention of calcium in areas deprived of blood circulation.

The softened capital epiphysis becomes flattened and widened (mushroomed) under the influence of the body weight and muscle pull, and the entire head and neck of the femur become involved in a coxa vara deformity. The end result of this deforming process depends on the extent and severity of the softening and on the efficacy of the treatment. In some untreated cases the coxa vara becomes so marked that abduction of the thigh is impossible and other motions of the hip joint are definitely limited. The actual shortening may amount to more than an inch. In view of such possible end results it is highly desirable to institute the same treatment that is indicated in cases of ordinary Legg-Perthes osteochondritis juvenilis coxae.

The use of plaster-of-paris spica casts is not advisable, because circular plaster-of-paris casts tend to produce demineralization and softening of bone, and because the prevention of weight bearing on the softened femoral head is much more important than the prevention of motion in the hip joint.

For these reasons a simple Thomas knee splint (often erroneously called a hip splint) of the ordinary or of the caliper type should be carefully fitted to the affected leg. This splint should have a comfortably padded ring, covered with wash leather, and the uprights should be 1½ inches longer than the leg so that no weight can be borne on the foot. If there is any tendency to pain or sensitiveness in the hip joint, with spontaneous muscle spasm, a traction device such as the Boston windlass or a pair of wire loops should be provided at the foot of the splint, so that adhesive plaster traction may be utilized. The splint will have to be worn for perhaps a year, so it is well to have the uprights adjustable for extra length. A sole and heel 2 inches high should be applied to the shoe of the opposite foot, and the child can then be allowed to walk freely. The splint must be worn at night as well as in the daytime. Complete rest in bed with a Bucks extension on the affected leg has been highly recommended by Danforth and others but is hardly advisable in the average case.

X-ray examinations should be made every two or three months to ascertain the rate of progress.

Calcium and phosphorus in some form and cod liver oil or one of the ergosterol or viosterol combinations should be administered with intelligence. Actual or artificial sunlight is to be recommended together with the application of local heat.

The objectives to be sought therefore, are to prevent deforming pressure on the softened head of the femur and to aid the recalcification and hardening of the bony structure.

In a child of 3 it would not be wise to consider drilling the femur into the neck and head of the femur by way of the trochanter.

HISTAMINE TEST OF CAPILLARY CIRCULATION

To the Editor—Is the skin test for deficiency of arterial circulation of 1,000 solution of histamine acid phosphate in physiologic solution of sodium chloride accurate and efficient? Is it reliable in every case? This is advocated by Geza de Takats in the *Archives of Surgery* 18: 671 [Feb.] 1929) wherein he cites Thomas Lewis's *The Blood Vessels of the Human Skin and Their Responses* London, Shaw and Sons 1927

M D, Iowa

ANSWER—The accuracy and efficiency of any biologic test procedure are dependent on the intelligence of the interpretation. The histamine flare test is physiologically sound and clinically useful in studying the capillary circulation, but to say that this or any other test is "reliable in every case" is unjustified. With the infinite variability of biologic constitution and response, errors due to misinterpretation can, do and will occur. The well known dictum that laboratory and other tests must not be blindly accepted in the face of contrary direct clinical evidence is still most true.

Lewis showed that a "triple response" occurs on the injection of minute quantities of histamine into the skin. In about twenty seconds a small red spot develops immediately about the puncture. Shortly afterward a widening red flare appears and after one or two minutes a small wheal appears exactly covering the red spot. The local red spot (first response) is due to capillary and venule dilatation and this occurs also in denervated skin. The secondary response of flare is due to arteriolar dilatation and local active hyperemia. The formation of the edematous wheal is dependent on locally increased blood flow and injury to the capillary endothelium, so that it becomes permeable to blood plasma. In view of the minute size of the vessels involved in this sharply localized reaction, one must interpret the character of the response as indicative of the condition of the capillaries, venules and precapillary arterioles only. It is not justified to consider these reactions as involving the larger arterial branches. Thus the test is by no means ideal for determining the rate or extent of blood flow in larger arteries for response will occur even with only a poor arterial supply of blood.

GLOSSODYNIA

To the Editor—I have a patient who complains of a sensitive tongue. He is a white man, aged 40 and is in good health otherwise. His tongue appears normal to inspection and his teeth and gums are in good condition. There are no sharp edges to irritate the tongue. The condition has been present for four years. He has remissions and exacerbations of the disease. He states that the tongue feels scalded as if from drinking something too hot. Hot foods and highly seasoned foods make the pain worse. Smoking seems to make the condition worse and he has omitted tobacco for months at a time but still has the trouble. The pain is located on the tip and sides of the tongue. His nose and throat are normal. Gastric analysis gives normal results. He does not have indigestion. There is no cardiorespiratory disease. There are no allergic symptoms. The Wassermann reaction is negative. The red and white blood cell count is normal. I have diagnosed this as chronic superficial glossitis. Do you think this diagnosis is correct? If so what is the treatment of this condition? What can be expected from the treatment that is can he get a permanent cure? Kindly omit name and town.

M D Louisiana

ANSWER—The diagnosis should be glossodynia rather than glossitis, for the description mentions no sign of inflammation of the tongue. Glossodynia may be due to (1) ill fitting dentures pressing on the anterior and posterior palatine foramina (2) disturbance of the temporomaxillary joint by an abnormal bite (3) sensitization to artificial dentures, (4) unclean fissures in a scrotal or lymphangiomatous tongue, (5) electric currents between metal dentures, (6) disease of the lingual tonsil (7) avitaminosis, (8) pernicious anemia or (9) idiopathic glossodynia. Only causes 5 to 9 need be considered in this case.

5 I am in 1932 called attention to the presence in many mouths of small electric currents, which in some instances cause pain or even erosions of the mucous membranes. They can be stopped by replacing tooth fillings so that all will be of the same metal. (Lain, E S. Chemical and Electrolytic Lesions of the Mouth Caused by Artificial Dentures. *Arch Dermat & Syph* 25: 21 [Jan.] 1932, Electrogalvanic Lesions of the Oral Cavity by Metallic Dentures, *THE JOURNAL* March 11, 1933 p 717)

6 Sluder in 1918 described the effects of disease of the lingual tonsil. Pain at or near the tip of the tongue is one of those effects. (Sluder, Greenfield. Some Clinical Observations on the Lingual Tonsil Concerning Goiter, Glossodynia and Focal Infection, *Am J M Sc* 156: 248 [Aug.] 1918)

7 Avitaminosis possibly related to pernicious anemia is sometimes responsible for pain in the tongue. (Hutter, A M,

Middleton, W S, and Steenbock, Harry. Vitamin B Deficiency and the Atrophic Tongue, *THE JOURNAL*, Oct 21 1933, p 1305)

8 Pernicious anemia often causes pain in the tongue even before the blood or stomach signs have appeared or there is any inflammation of the tongue. The case under discussion, if no other cause of the trouble has been found, should be watched with this possibility in mind.

The pressure of tumors or an inflammatory neuritis may cause glossodynia in rare cases. Cancerphobia has something to do with some cases, though it is often a result of the pain rather than a cause of it. Discovery of a cause amenable to treatment makes a good prognosis.

9 There are cases, however, in which the cause remains hidden. For these palliation is the only possible line of treatment and this is usually unsatisfactory, for anesthesia destroys the sense of taste. It may be attempted by having the patient hold Dobell's solution in the mouth for several minutes or by the use of ethylaminobenzoate.

HEART ATTACKS AND INDIGESTION

To the Editor—A married woman aged 60 has had frequent attacks of indigestion for the past year or so most of which occurred when she had gone to New York (a short train ride relationship presumably associated with exertion). Attacks are characterized by epigastric distress, gas and occasionally nausea. She has had no medical attention for many years because aside from this she has been in unusually good health. The present attack is similar to the others but much more severe. The duration when first seen was about four hours. Onset had been rapid but not sudden. The chief complaint was a severe constant epigastric pain not referred to either side of the abdomen. Nausea was present and the patient had vomited three or four times. There were moderate gaseous eructations. The bowels were normal. There were no other complaints. The patient was obese and when examined, in acute discomfort from pain. There was no dyspnea or cyanosis and no evidence of shock. Vomiting occasionally occurred. The heart was moderately enlarged to the left to percussion the sounds were of poor quality. There was a generalized precordial systolic murmur. Frequent extrasystoles (often four or five in a row) occurred. The apex rate was 96. The radial pulse was 80 and of extremely poor quality. The blood pressure was 140 systolic 100 diastolic. The lungs were clear. The abdomen was not distended and was without spasm or masses. There was very slight generalized tenderness. No clubbing or edema of the extremities was present. She was given digitalis and the hydrochlorides of the alkaloids of opium principally morphine. The following morning (twelve hours later) the patient felt slightly better. She had vomited several times during the night. The pain had shifted to the right lower quadrant although a mild epigastric distress remained. The tongue was dry. The pulse was of excellent quality and regular with a rate of 80. There was no pulse deficit and only occasional extrasystoles occurred. The oral temperature was 99.6 F. The rate of respiration was 24. The blood pressure was 160 systolic 84 diastolic. The patient had a total of 7½ grains (0.5 Gm.) of digitalis. The heart sounds were much improved. The chest was clear the murmur unchanged. The abdomen was soft with slight tenderness at McBurney's point. Pelvic and rectal examinations were negative. An electrocardiogram taken at this time showed iso electric T₁ and low T₂ and T₃ with definite evidence of coronary sclerosis but not of any infarct. No irregularity was present. Seven hours later the pain in the right lower quadrant had subsided somewhat and the patient was considerably more comfortable. A low saline enema had given good results and some flatus. The rectal temperature was 102.6 F. The abdomen was slightly distended. Peristalsis was overactive. Tenderness at McBurney's point was marked. Pelvic and rectal examinations were still negative. The leukocyte count was 17,250 with 85 per cent polymorphonuclears and a shift to the left. A diagnosis of acute appendicitis was made, and appendectomy was done under tribrom ethanol gas-oxygen anesthesia. The appendix was found bound down with old and recent adhesions in a fatty bed. The tip and the base were both gangrenous the latter being the site of a fecalith. There was a small amount of free seropurulent exudate. The appendix was removed with out rupture and the abdomen was drained. It is not probable that the heart condition is secondary to that of the appendix. What is the most likely cardiac diagnosis? What is the prognosis regarding future coronary thrombosis in the light of the present illness?

M D New York

ANSWER—With a woman of 60 with coronary disease it would seem as if attacks of indigestion which come particularly when she overexerts herself on trips to the city should be ascribed to cardiac embarrassment. The fact that before this illness she enjoyed good health tends to rule out cholecystitis and other common causes of indigestion.

Care must be exercised in making a diagnosis from abnormal T waves when large doses of digitalis have recently been given. Another electrocardiogram should be studied later. An exact diagnosis with regard to the heart condition can hardly be made on the basis of the facts now available. It is doubtful whether the heart trouble is due to the appendicitis. If the patient has had a coronary thrombosis, the prognosis will depend largely on the amount of cardiac reserve which the patient has when she gets up and starts to walk again. If her rope is then short—in other words, if when she starts to walk she is soon halted by distress or precordial pain or dyspnea—the prog-

nosis will be poor. If, however, she finds after a good rest and complete recovery from the appendicitis that her cardiac reserve is large it may well be that she will go on to live in fair comfort for years.

TREATMENT OF DIABETES

To the Editor—A man aged 65 weighing 171 pounds (78 kg.) and 5 feet 10 inches (178 cm.) in height has had diabetes for fifteen or twenty years and his tolerance to insulin seems to be gradually increasing. His diet at present is carbohydrate 142 Gm, protein 86 Gm, fat 120 Gm divided as follows:

	Carbo- hydrate Gm	Protein Gm	Fat Gm
Breakfast	48	26	64
Lunch	39	13	18
Supper	55	47	38

Twenty minutes before breakfast he receives 75 units of insulin and twenty minutes before supper 40 units. He has taken this dosage for the past six months and never had an insulin reaction. Sugar is present almost constantly in the urine. The last fractional test showed from 7 to 11 a m 4 plus from 11 a m to 4 p m 1 plus from 4 to 9 p m 2 plus and from 9 p m to 7 a m a trace. He has urinary frequency of moderate severity but no thirst. He complains of pains in the legs and shows slight impairment of tactile discrimination on the feet. The dorsalis pedis pulsations are good. Six months ago he was taking about 75 units daily without satisfaction so he entered a hospital for ten days and was never satisfactorily regulated, leaving the hospital with his present dosage. No infection is present. The urine usually shows a trace of acetone. The blood sugar stays between 300 and 400. The patient is doing office work and feels fairly well except for the pains in his legs. Attempts to reduce his caloric intake six months ago made him feel weak. Please offer suggestions for treating this case.

J. CAMPBELL KERN, M.D., Sanderson, Texas

ANSWER—If the persistent blood sugar values of 300-400 mg per hundred cubic centimeters are morning fasting blood sugars, the fact that the patient's 9 p m to 7 a m urine specimen shows only a trace of sugar means that he must have a steeply rising blood sugar at about 6 a m. It is difficult to keep this type of patient completely sugar free on any dosage of ordinary insulin. The newly available protamine zinc insulin makes it possible to control this type of case much more adequately. Protamine insulin might be tried in approximately the same doses as the regular insulin now used but administered one hour before breakfast and supper respectively. Giving the total dosage of protamine insulin in one dose in the morning, is not recommended for this type of patient.

Because of the patient's age, because of constant presence of a trace of acetone in the urine, and because the attempt at reducing his caloric intake made him feel weak, it might be well to increase the carbohydrate content of the diet, for instance, carbohydrate 187 Gm, protein 86 Gm, fat 100 Gm.

If for any reason it is not desired to change the type of insulin used, the morning dose of regular insulin may be cautiously increased (about 5 units at a time) until fractional urine tests show that the urine is almost free from sugar throughout the day. During this time it may be necessary to reduce the evening dose of insulin somewhat, in order to avoid hypoglycemic reactions during the evening or early morning hours. Having obtained better control of the diabetes as shown by the urine tests, one can then obtain a more exact idea of the adequacy of the control by determining the blood sugar values not only in the morning before breakfast but also at appropriate intervals during the day. It would be better not to start this suggested change in insulin dosage until the effect of the change in diet has been observed.

BILE SALTS FOR ARTHRITIS

To the Editor—What is the present status of bilirubin and bile salts intravenously in the treatment of infectious arthritis? M.D., Arizona

ANSWER—Researches on the effect of injections of bilirubin and bile salts in cases of chronic infectious (atrophic) arthritis have been begun but recently. Only a preliminary report of them has been made (*Science News Letter*, June 19, 1937) and this form of treatment is still distinctly an investigative procedure. Bilirubin is still quite expensive; the method of preparation of the bilirubin bile salt mixture is empirical and the solutions which must be prepared daily are not stable. Hence it is not yet a procedure for general use. This method of research therapy was reported by Thompson and Wyatt of Tucson, Ariz., at the Atlantic City meeting of the American Rheumatism Association, June 7. Ten patients with chronic atrophic arthritis were given daily intravenous injections of the bilirubin-bile salt mixture for about eight to twelve days. It was reported that artificial hyperbilirubinemia was accomplished and that remissions in symptoms of the arthritis were

induced for variable periods. In some cases symptoms recurred after two or three weeks, in other cases they had not returned after five months. Hench observed that when patients developed a significant intercurrent jaundice (with a serum bilirubin more than approximately 8 to 10 mg per hundred cubic centimeters) a prompt and dramatic remission in symptoms was induced. At the recent meeting Hench reported further observations on the phenomenon as it affected a second series of thirty-one patients with atrophic arthritis, fibrositis or sciatic pain. All the fibrositic patients and 63 per cent of the arthritic patients were relieved temporarily of all rheumatic symptoms. Thirty-seven per cent of the arthritic patients were markedly but incompletely relieved. The remissions lasted from three weeks to forty-five months, in general they lasted several weeks. The arthritic patients were relieved of symptoms for an average of about four months, the fibrositic patients for an average of about five months. In the majority of cases the rheumatic symptoms returned to their previous intensity, but in 39 per cent the symptoms returned (and remained) in milder form. The effect of jaundice is more quantitative than qualitative since several types were equally effective in precipitating the phenomenon: intrahepatic jaundice from cinchophen, spontaneous intrahepatic jaundice of the catarrhal or epidemic "infectious" type, jaundice associated with hepatitis and cirrhosis, obstructive jaundice from stones or a malignant condition. The phenomenon seemed to be relatively specific for atrophic arthritis and fibrositis. The pains of acute gouty arthritis, postherpetic neuralgia, ischemic neuritis, parietal metastasis and arthralgia of a special type were unrelieved in the presence of jaundice.

The therapeutic implications were obvious and Hench tried to repeat the phenomenon by the use of bile salts, bile feedings by stomach tube, transfusions of jaundiced blood and experimental jaundice from toluylenediamine. He concluded that chronic atrophic arthritis and primary fibrositis are not necessarily relentless, uncontrollable diseases. Nature apparently possesses a highly effective method of producing a dramatic remission, this phenomenon is precipitated more rapidly and completely by jaundice than by any other known physiologic change or therapeutic method.

If the method of Thompson and Wyatt can be repeated successfully it will permit clinical investigators to study the phenomenon much more closely and perhaps help them to isolate the responsible agent and utilize it for the future treatment of chronic arthritis.

Following are references to the work of Hench:

- Hench, P. S. Analgesia Accompanying Hepatitis and Jaundice in Cases of Chronic Arthritis, Fibrositis and Sciatic Pain. *Proc. Soc. Med. Mayo Clin.* 8: 430 (July 12) 1933.
Analgesic Effect of Hepatitis and Jaundice in Chronic Arthritis, Fibrositis and Sciatic Pain. *Ann. Int. Med.* 7: 1278 (April) 1934.
A Clinic on Some Diseases of Joints. *Studies I, II, III and IV.* *M. Clin. North America* 19: 551 (Sept.) 1935.

CLIMATE IN PULMONARY TUBERCULOSIS

To the Editor—Would you kindly tell me whether the climate of Santa Fe, N. M. or Colorado Springs is considered better for a patient with an early pulmonary tuberculosis?

W. E. DELICATE, M.D., Edwardsville, Ill.

ANSWER—There is considerable diversity of opinion regarding the value of climate and altitude in the treatment of pulmonary tuberculosis. If one were to accumulate pamphlets from chambers of commerce of twenty-five cities that enjoy reputations as health resorts, one would find in each pamphlet apparently convincing arguments as to just why that particular location is best for the tuberculous patient, and yet the climatic conditions would vary greatly and the altitude would range from approximately sea level to 7,000 feet or higher. After all, the treatment of pulmonary tuberculosis has been pretty well standardized by physicians, essentially the same methods are practiced in all parts of this country and other nations.

The most important step in the treatment of any patient with tuberculosis is to make sure that he is under the care of a well qualified physician who will recommend and carry out the various therapeutic measures as they are indicated and will provide for adequate nursing care when necessary. Mainly because of the large number of tuberculous patients who have been migrating to the southwestern part of the United States during the past few decades there has been a demand for physicians highly trained and experienced in tuberculosis, with the result that there is now located in every city one or more first class physicians in this field. This holds true of both Santa Fe and Colorado Springs. Therefore either place would be satisfactory, provided the patient selects or is referred to a first class physician and is pleased with his surroundings. The climatic condition should be looked on as a minor consideration.

SYSTEMIC REACTIONS TO QUININE

To the Editor—I wish to ask a question regarding certain symptoms that appeared after an injection of quinine. A woman aged 36 in good general health received three injections of quinine and urethane (5 grains or 0.3 Gm) for varicose veins. The first two were followed by no reaction other than a mild generalized burning and tingling sensation. The third injection was followed by a more severe reaction: the generalized burning and tingling were much worse and in addition there was a pronounced bitter quinine taste in the mouth. The injection was given at 8 p. m. and the bitter taste lasted the rest of the evening. Because this injection was into a large vein in the thigh the patient was under the impression that more of the quinine spilled over into the system than was the case with the first two injections. The morning after the third injection the patient felt well. At 2 p. m. without warning there was marked blurring of vision of the left eye (she tested each eye separately) tingling of the left side of the face in the region of the eye and a dull ache in the left frontal region. She was alarmed and lay down between 2:30 and 3 she fell asleep. At 5 o'clock when she awoke she was well and the symptoms did not return. At the age of 12 she was confused for a few hours after taking quinine for a cold but throughout her subsequent life she habitually took 5 grains of quinine for a cold without abnormal effect. She is not sensitive to other drugs. Neither she nor any of her family has ever had migraine. Are symptoms like hers known to occur after quinine and urethane and are they a contraindication to further treatment? Please omit name.

M. D. Pennsylvania

ANSWER—Untoward systemic reactions following the intravenous injection of quinine may be grouped into immediate and delayed reactions. They may be caused by sensitivity to the drug which manifests itself in edema, cyanosis and bronchial spasm and may give an alarming picture unless promptly aborted by epinephrine. The late reaction is seen from six to ten days later as a generalized itchy eruption, malaise and fever, and it may last several weeks. The description of the correspondent, however, suggests a toxic reaction to quinine. It is known that certain patients respond to moderate doses of quinine with dizziness and with visual and aural disturbances. Their central nervous system is intolerant to the drug. Once such a reaction is obtained, it is unwise to proceed with the drug as subsequent doses may have a cumulative effect. It must be remembered that approximately one out of every 200 patients will show some intolerance to quinine. Therefore it is advisable to start with small doses such as 1 cc. of a 10 per cent solution (0.1 Gm, or 1½ grains). The initial dose of 5 grains seems high.

One might conceive finally that the unilateral tingling pain and blurring of vision occurred on a vascular basis by embolism or vascular spasm of the cerebral vessels. Certainly with these antecedents the further use of quinine would not be advisable. One can switch to 10 per cent sodium morrhuate or 10 per cent potassium oleate, but even these drugs should be given in small initial doses and in not longer intervals than five days apart to minimize sensitization.

TREATMENT OF SYPHILIS

To the Editor—In March 1934 I saw a white woman aged 23 with some half dozen deep ulcerations about the face. There were also numerous white irregular scars from previous ulcers that had healed. The history revealed the presence of these for eighteen months. A blood Wassermann reaction showed four plus. A diagnosis of syphilis with tubercular syphilitic lesions of the face was made. The patient gave no history of syphilitic infection. However the husband admitted a syphilitic infection of some six years standing. Under antisypilitic treatment both local and systemic these lesions healed and the patient's general condition improved. The patient had thirty five doses of neoarsphenamine (from 0.6 to 0.75 Gm each) and thirty five doses of a bismuth compound during the following fifteen months with rest periods interspersing the courses of each drug. There has been no treatment since the middle of 1935. A Wassermann test at that time still showed a four plus reaction. The patient was symptom free. Will you tell me through your columns what treatment if any you would recommend for this patient?

M. D. Iowa

ANSWER—Unfortunately the correspondent does not give enough information to judge the condition of the patient accurately. Apparently there has been no change in the blood Wassermann reaction throughout the treatment. On the other hand no statement is made whether the physical examination shows any evidence of central nervous system involvement. It is most essential that a lumbar puncture be done in a case of this sort, for that may go far to explain the persistently positive Wassermann reaction. It is not uncommon for a patient who has had syphilis of some years duration to have a persistently positive Wassermann reaction. Also no mention is made of the possibility of involvement of the cardiovascular apparatus which might explain a persistently positive Wassermann reaction. We would recommend that the patient be gone over carefully from this point of view. If this is done and no evidence of involvement is found one must simply look on the patient now as having recovered at least from her ulcerocrustaceous

sypyloderm. The cooperative group studies have shown without any question that far better results are achieved when alternating courses of arsenicals and bismuth compounds are given without any rest periods.

Under the circumstances we would recommend that the patient be given, provided there is no cardiovascular or central nervous system involvement, a course of weekly injections of mapharsen, each 40 mg and consisting of ten injections. This is to be followed by a course of weekly injections intramuscularly of bismuth salicylate, each equivalent to 0.13 Gm of metallic bismuth. Since the patient is now approaching the so called late period of the disease it might be perfectly safe after this further therapy to give her a rest period for two months and thereafter for two years to give her a course of ten intramuscular injections of a bismuth compound. Naturally such a patient should be kept under observation and gone over carefully every six months.

SWELLING AND DISCOLORATION NOT SIGNS OF DEATH FROM FREEZING

To the Editor—Recently in an adjoining county the wife of a rancher left her home about dusk, or shortly after dark and set out for an adjoining ranch during a severe subzero storm. Making little headway against the cold in the direction of her destination it appears that she retraced her steps and set out toward another destination so as not to have to face the storm. Two days later searchers found her frozen body in a ravine or other rough country, her legs exposed by her stockings being cut to ribbons by sagebrush through which she must have gone in the night. She was poorly clad in relation to the weather. Further it is reported by those interested in her affairs that when the body was thawed out to permit the undertaker's embalming the lips were extremely swelled and that the neck and face were much swelled and discolored, also that the undertaker could not embalm the head because of the ruptured condition of the vessels in this region. Thus the body was not given publicly at the funeral. The claim is made that there were many quarrels in the family and that on this occasion the woman left the house following such an altercation. At least it is presumed that she was roughly handled and that the condition of the face and neck was due to injury inflicted in the affair by the husband. A legal investigation has been initiated. I am informed. The question that is troubling relatives and others is whether these conditions were natural in a frozen body or whether they had a traumatic origin before the person was frozen or other parts of the body did not show such conditions. Not having seen a body exposed to such severe cold I could not give a positive opinion to my consultants. What would be the normal and the pathologic conditions? No claim was advanced that the woman encountered any severe traumatic injury after leaving her home or that she was lost in the storm but it is stated that she was subject to fits. To say the least the situation is controversial from any angle. PAUL P. HALLECK, M.D. Broadus, Mont.

ANSWER—The question is whether extreme swelling of the lips, face and neck with discoloration could have been caused by freezing of the body. The answer is no. The process of freezing itself does not cause any swelling and discoloration of the soft parts. The swelling and discoloration as well as possible rupture of the vessels in the neck must have been present before freezing took place. In cases like this it would be impossible to reach a satisfactory conclusion in regard to the nature of the swelling and discoloration without a thorough postmortem examination and determination of the condition of the bones and internal organs.

EFFECTS OF PHOSPHATURIA

To the Editor—A man aged 24 is apparently in perfect health except for a chronic phosphaturia with occasional dull pains at the end of the penis. He has had no venereal disease and other than an appendectomy two years ago the history is negative. Please advise me as to the cause, significance and treatment for this trouble.

STANLEY M. GATES, M.D. Monticello, Ark.

ANSWER—Normally the kidneys secrete from 1 to 5 Gm daily of phosphoric acid in the form of phosphates. The phosphates are in combination with the alkali bases (sodium, potassium, ammonium) or the alkaline earth metals (calcium, magnesium). At times the amount rises or the phosphates are precipitated by a change in reaction of the urine toward the alkaline. The calcium and magnesium phosphates are precipitated in alkaline urine.

The phosphates in the urine are derived partly from the food partly from the decomposition of organic substances containing phosphorus. They are increased in diabetes mellitus, bone diseases and pulmonary tuberculosis. They are especially abundant in the urine because of precipitation in chronic cystitis when an alkaline putrefaction takes place in the bladder. They are increased by a milk diet and by alkaline mineral waters. Muscular activity increases the excretion of phosphorus. A high purine diet increases uric acid and phosphorus excretion. The phosphates are markedly increased in cystic bone disease owing

to hyperfunction of the parathyroids Vitamin D administration and ultraviolet rays increase the phosphate excretion In rare cases there is a continued increase in the total amount of phosphates in the urine in the absence of disease, called true phosphaturia

A diagnosis of phosphaturia is usually based on the presence in the urine of a dense deposit of phosphates Analyses in many cases do not show an increased amount of phosphoric acid but merely a change in the reaction of the urine from acid to alkaline The phosphates precipitating in the urine are often secondary formations, which give rise to symptoms of pain or burning in the urinary tract similar to those of oxaluria

The treatment should remove any infection present, lower the intake of calcium and render the urine acid with acid sodium phosphate or ammonium chloride The fluid intake should be increased A balanced diet will often rectify the trouble in a short time

DIAGNOSIS OF SYPHILIS

To the Editor—A man aged 62 weighing over 200 pounds (90 kg) has led a strenuous business life for the past twenty five or thirty years In early manhood, following an acute disease, he had phlegmasia alba dolens Since that time his leg has remained swollen but has not given him a great amount of trouble About thirty years ago he had gonorrhea and following that some hypertrophy of the prostate This condition has not affected his virility nor could it be called a pathologic condition at this time During the past few years on three widely separated occasions he has had a blister like sore on the penis but it disappeared on the use of a mercury bichloride solution However when this sore appeared for the third time it was after a suspicious intercourse and a darkfield examination was made and showed no spirochetes However regardless of this and though it was too early for a Wassermann test to be of value he insisted on taking neoarsphenamine At his request he was given every other day three intravenous injections of 0.03 0.04 and 0.06 Gm of neoarsphenamine Within a day or two following this he had occasion to have his blood pressure taken and the systolic reading was 250 The next day it was 180 and now it remains at 170 Several weeks prior to the intravenous medication his blood pressure was 170 Would this rather rapid giving of an arsenical result in a temporary increase of blood pressure? The diastolic reading is not known There is apparently no kidney involvement At no time has the patient used alcohol to excess Occasionally he takes one or two highballs at night but does not make a practice of overeating As you see, the history of syphilis is rather vague and in my opinion the penile sores could not have been syphilitic He has also been a rather heavy eater

STANLEY M GATES, MD Monticello Ark.

ANSWER—One is never justified in starting treatment for syphilis without an absolute diagnosis One negative darkfield does not exclude a diagnosis of syphilis Repeated darkfield examinations should be made If they are negative, the patient should be followed with weekly Wassermann tests until such a time when one could be positive one way or another as to whether the patient has syphilis Sometimes with patients like this it is possible to make examination of the lymph node juices by puncture with a needle and do a darkfield examination on these fluids Consequently one is not justified in giving neoarsphenamine Moreover, a man 62 years of age, weighing more than 200 pounds, would not be a good subject for neoarsphenamine every other day It is not surprising that his blood pressure went up to 250

It is recommended that no more neoarsphenamine be used on this patient, but that a Wassermann test be made once a month for the next year If all of them remain negative, the chances are that he never did have a syphilitic infection

CRUDE PETROLEUM FOR ABRASIONS

To the Editor—What benefits may arise from the use of crude petroleum as a dressing for cuts particularly cuts and scratches on domestic animals? Has it any antibacterial effect and will it aid healing? Also has it any antiparasitic effect?

MD Iowa

ANSWER—Crude petroleum varies in composition, depending on its source Some areas, for instance, yield a product with a much higher content of sulfur than others There is likewise a considerable variation in their content of various toxic materials All samples have more or less toxicity It is therefore inadvisable to employ crude petroleum to any considerable extent as an application for wounds Furthermore, there have been no responsible reports describing any particular benefits from it for this purpose nor are there reliable studies showing any virtues for crude petroleum as a bacteriostatic On the contrary, what meager evidence there is seems to show that bacteria are not harmed by it Crude petroleum has been used to some extent as a parasiticide When infestations occur on man or animals however, it would seem better to use agents of a more uniform composition, less toxic action, and more certain parasitocidal effect

POSSIBLE HARM TO X-RAY OPERATOR DURING FLUOROSCOPY

To the Editor—I use the fluoroscope frequently For protection I use a medium weight apron and gloves but no head protection Often after fluoroscopy my face feels burned and the nose and throat feel dry and irritated At times also the skin of my body and legs feels irritated I also may feel tired and develop intestinal disorders Would you advise wearing the heaviest obtainable apron and gloves? Would you advise a head protection? Could the rays affect the thyroid gland and be responsible for an increase in weight?

MD New Jersey

ANSWER—From the description it seems that the protective measures used are safe Most of the manifestations described are probably not attributable to x-ray exposure, but it is better to be cautious than sorry, for the x-rays are subtle It is advisable to keep the kilovoltage below 85, not use more than 3 milliamperes, keep the aperture of the diaphragm as narrow as possible, test the protective glass of the fluoroscopic screen and not do fluoroscopy over prolonged and continuous period Incidentally, vertical fluoroscopy gives some protection because of the interposed patient Probably a head protector is not needed Also it is improbable that the increase in weight is due to x-ray exposure

POSITIVE WASSERMANN TEST IN UNRESOLVED PNEUMONIA

To the Editor—In the past year I have observed in our ward service a clinical syndrome commonly known as unresolved pneumonia (x-ray diagnosis) with positive syphilitic serologic reaction Does unresolved pneumonia produce a false serologic picture or does a weakly positive blood predispose to failure in pneumonic resolution? These patients show no clinical evidence of syphilis

J F LOEBLE MD Lebanon Pa

ANSWER—A positive Wassermann or Kahn reaction is some times observed during pneumococcal consolidation especially during the febrile period in patients who are not syphilitic A failure of pneumonia to resolve does not depend on the presence of previous syphilitic infection A weakly positive blood, under the circumstances narrated, is not evidence that the failure to resolve is due to a previous latent syphilis Alleged failure to resolve is often due to a preexisting tuberculosis, to a neoplasm or to preexistent bronchiectasis

TREATMENT OF ALCOHOLIC HANGOVER

To the Editor—What is your opinion on the treatment of post alcoholic hangover I have found nothing very effective in the treatment of the malaise and anorexia associated with the condition My patients are farmers who go on occasional or periodic sprees for a few hours at night and have to work the next day I realize that the best thing is the avoidance of excess but that is a big order for the people in this section Will you help me out?

MD Mississippi

ANSWER—The rational treatment for alcoholic hangover is suggested by the observations of Himwich and his associates (The Metabolism of Alcohol, THE JOURNAL, March 4, 1933 p 651) They showed that the ingestion of large amounts of alcohol causes retention of carbon dioxide and accumulation of lactic acid The treatment, therefore, should be directed toward the acidosis

INTRADERMAL USE OF VACCINES

To the Editor—Is there any advantage in giving vaccines intradermally as opposed to subcutaneously? If given intradermally should the same dosage or a smaller dosage be given? I have been told that vaccines given intradermally are more effective because the absorption is slower Is this true?

FRED S TABER MD New Brunswick N J

ANSWER—It is better to give vaccines intradermally rather than subcutaneously for several reasons Should an abscess develop, the subcutaneous injection will result in a much more extensive suppuration than would occur in an intracutaneous injection A small dose given intradermally is believed to give as good results as a larger dose given subcutaneously, because the skin itself is credited with specific immunizing qualities that are lacking in subcutaneous tissue As absorption is slower, there is less likelihood of a severe septic reaction after intradermal than after subcutaneous injections

ORCHITIS FROM UNDIANT FEVER

To the Editor—In Queries and Minor Notes in THE JOURNAL July 24 a question is asked by MD Georgia as to the cause of orchitis In reply brucellosis is not mentioned as a possible cause of orchitis although it is a well proved fact From my own experience I would say it is a rare complication of brucellosis (two in farces more than 200 cases) but nevertheless it merits worthy of special mention

HAROLD J HARRIS MD Weirton W Va

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA Montgomery, June 28 Sec Dr J N Baker 519 Dexter Ave Montgomery

ARKANSAS *Basic Science* Little Rock Nov 1 Sec Mr Louis E Gebauer 701 Main St Little Rock *Medical (Regular)* Little Rock Dec 21 22 Sec Dr L J Kosminsky Texarkana *Medical (Eclectic)* Little Rock Dec 21 Sec Dr Clarence H Young, 1415 Main St Little Rock

CALIFORNIA Sacramento Oct 18 21 Sec Dr Charles B Pinkham 420 State Office Building Sacramento

CONNECTICUT *Medical (Regular)* Hartford Nov 9 10 *Endorsement* Hartford Nov 23 Sec Dr Thomas P Murdock 147 West Main St Meriden *Medical (Homeopathic)* Derby, Nov 8 9 Sec Dr Joseph H Evans 1488 Chapel St New Haven

DELAWARE Dover July 12 14 Sec Medical Council of Delaware Dr Joseph S McDaniel 229 S State St Dover

DISTRICT OF COLUMBIA *Basic Science* Washington Dec 27 28 *Medical* Washington Jan 10 11 Sec Dr George C Ruhland 203 District Bldg Washington

FLORIDA Jacksonville Nov 15 16 Sec Dr William M Rowlett Box 786 Tampa

ILLINOIS Chicago Oct 19 21 Superintendent of Registration Department of Registration and Education Mr Homer J Byrd Springfield

IOWA Des Moines Nov 8 10 Dir Division of Licensure and Registration Mr H W Greife State Department of Health State House Des Moines

KANSAS Topeka Dec 14 15 Sec Board of Medical Registration and Examination Dr J F Hassig 905 N 7th St Kansas City

KENTUCKY Louisville Dec 7 9 Sec State Board of Health Dr A T McCormack 532 W Main St Louisville

MAINE Portland Nov 9 10 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St Portland

MARYLAND *Medical (Regular)* Baltimore Dec 14 17 Sec Dr John T O Mara 1215 Cathedral St Baltimore *Medical (Homeopathic)* Baltimore Dec 14 15 Sec Dr John A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston Nov 8 10 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 F State House Boston

MINNESOTA Minneapolis Oct 19 21 Sec Dr Julian F Du Bois 350 St Peter St St Paul

MISSISSIPPI *Reciprocity* Jackson Dec Asst Sec State Board of Health Dr R N Whitfield Jackson

MISSOURI Kansas City Oct 20 22 State Health Commissioner Dr Harry F Parker State Capitol Bldg Jefferson City

NEBRASKA Lincoln Nov 15 16 Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEVADA Carson City Nov 1 3 Sec Dr John E Worden Carson City

NEW JERSEY Oct 19 20 Sec Dr James J McGuire 28 W State St Trenton

NORTH CAROLINA *Endorsement* Raleigh Dec 6 Sec Dr B J Lawrence 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks, Jan 4 7 Sec Dr G M Williamson 4 1/2 S 3rd St Grand Forks

OHIO Columbus Dec Sec State Medical Board Dr H M Platter 21 W Broad St Columbus

OKLAHOMA *Basic Science* Oklahoma City Dec 1 Sec of State Hon Frank C Carter State Capitol Bldg Oklahoma City *Medical* Oklahoma City Dec 8 Sec Dr James D Osborn Jr Frederick

OREGON *Basic Science* Portland Nov 20 Sec State Board of Higher Education Mr Charles D Byrne University of Oregon Eugene

PENNSYLVANIA Philadelphia Jan Sec Board of Medical Education and Licensure Dr James A Newpher 400 Education Bldg Harrisburg

SOUTH CAROLINA Columbia Nov 9 Sec Dr A Earle Booser, 505 Saluda Avenue Columbia

SOUTH DAKOTA Pierre Jan 18 19 Director of Medical Licensure Dr B A Dyar Pierre

TEXAS Wichita Falls Nov 8 10 Sec Dr T J Crowe 918 19 20 Mercantile Bldg Dallas

VERMONT Burlington Feb 8 Sec Board of Medical Registration Dr W Scott Noy Underhill

VIRGINIA Richmond Dec 8 10 Sec Dr J W Preston 28 1/2 Franklin Road Roanoke

WEST VIRGINIA Charleston Nov 8 10 Sec Public Health Council Dr Arthur E McClue State Capitol Charleston

WISCONSIN *Basic Science* Milwaukee Dec 11 Sec Prof Robert N Bruer 3414 W Wisconsin Ave Milwaukee *Medical* Madison Jan 11 14 Sec Dr Henry J Gramling 2203 S Layton Blvd Milwaukee

WYOMING Cheyenne Oct 18 Sec Dr G M Anderson Capitol Bldg Cheyenne

SPECIAL BOARDS

Examinations of Special Boards were published in THE JOURNAL October 9, page 1221

Arizona July Report

Dr J H Patterson, secretary, Board of Medical Examiners, reports the written examination held at Phoenix, July 6-7, 1937. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Six candidates were examined 5 of whom passed and one failed. Four physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented

School	PASSED	Year Grad	Per Cent
University of Arkansas School of Medicine		(1936)	79.6
College of Medical Evangelists		(1936)	88
Northwestern University Medical School		(1936)	88.9

School	FAILED	Year Grad	Reciprocity with
Western Reserve University School of Medicine		(1935)	80.3
University of Wisconsin Medical School		(1936)	76.9
School	FAILED	Year Grad	Reciprocity with
University of Illinois College of Medicine		(1936)	
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Tulane University of Louisiana School of Medicine		(1929)	Louisiana
Creighton University School of Medicine		(1932)	California
University of Nebraska College of Medicine		(1933)	Nebraska
Duke University School of Medicine		(1934)	Virginia
School	LICENSED BY ENDORSEMENT	Year Grad	Reciprocity with
McGill University Faculty of Medicine		(1935)	N B M Ex

Book Notices

Maternal Care. The Principles of Antepartum Intrapartum and Postpartum Care for the Practitioner of Obstetrics. Approved by The American Committee on Maternal Welfare Inc. Prepared by Dr W C Danforth Dr G W Kosmak Dr R L DeNormandle and Dr F L Adair. Dr F L Adair editor. Cloth Price \$1 Paper Price 25 cents Pp 93 Chicago University of Chicago Press 1937

This booklet should be studied most carefully by every practitioner of medicine who takes care of maternity cases, because it contains a wealth of useful information. It is safe to say that if a majority of the general practitioners in this country will acquaint themselves with the contents of this book there will be a marked improvement in antepartum, intrapartum and postpartum care with a consequent sudden and dramatic decrease in the maternal and fetal mortality and morbidity. The section on intrapartum care is particularly noteworthy for the general practitioner because it contains detailed instructions concerning the delivery of women in their own homes. Information is given not only for spontaneous deliveries but also for forceps operations, version and extraction, and breech delivery. The book is extremely well written and is delightful to read. The editor and his associates deserve the highest praise for their accomplishment.

Traité de biocolloïdogie Tome IV État colloïdal et biologie Fascicule VI Narcose Par W Kopaczewski Paper Price, 35 francs Pp 763 924 Paris Gauthier Villars 1936

This is the sixth (and completing) section of the fourth volume of Kopaczewski's 2,500 page work on the biocolloids. Such a treatise promises small reward to any publisher courageous enough to undertake it, wherefore thanks to France. In essence, this work is (as it must be) a "review." As such it recommends itself to any beginning worker too lazy to familiarize himself directly with first publications. But Kopaczewski's treatise brings a second good feature: it is critical. Half of this fascicle (pp 847-924) is devoted to author, subject, figure and table indexes (the last two interesting because unusual), the remaining half (pp 763 845) to a discussion of narcosis. The first pages of the second half discuss history—the discovery of the narcotics, their widely differing chemical (they may be organic or inorganic) and physical character (faradization and cold), and the universality of the narcotic response (all cells may be thus poisoned). There are tables covering the sensitiveness of different tissues to a given "anesthetic" and its relative concentrations in them, to the diffusion rates of the different narcotics and their final (equilibrium) concentrations. Interesting notes are made of antagonisms and synergisms existing between "anesthetics" and other compounds (caffeine, camphor, epinephrine or the acids). Correlations are cited between narcosis and the chemical constitution of the narcotics, their diffusion rates, their fat solubility, their surface activity and their colloid effects. Thus introduces a discussion of the existent theories of the process. Kopaczewski sums them up under seven heads. Beginning (in 1902) with the asphyxial theory of Verworn (which the author says belongs to Winterstein) he passes to that of Overton and Meyer, according to whom narcotic effect is the product of the coefficient of partition between an aqueous and a lipid phase. Traube's surface tension theory (attributed by Kopaczewski to Richardson, 1869) comes next, and fourth is recited Claude Bernard's coagulation hypothesis of 1875. The fifth item is made of the unrecognized view of Dubois (1884) that narcosis parallels dehydration and

the conversion of hydrophilic cell colloids into hydrophobic. Of a sixth theory (that of Warburg and his change of oxidation rate when protoplasm is narcotized) the author does not think much. He thinks even less of the most modern, seventh hypothesis of a "modification of the permeability of the limiting cell membrane." Pointing to the violent contradictions that appear at the very beginnings of experiment (some authors hold that permeability is increased, others that it is decreased) he asks sanely enough, "What is the mechanism of this permeability?" In similar fashion he pictures the inadequacies discovered and, therefore, the non sequiturs of any of the other hypotheses when looked at alone, emphasizing quite correctly however that there is nothing mutually exclusive in the several concepts of diffusion, adsorption, dehydration or flocculation of cellular content when viewed together. What he says in his criticism of the "permeability" theory covers in general his view of all the rest. "When we look the established facts well in the face we arrive at an impasse and these are all too numerous."

Taylor's Practice of Medicine By E. P. Poulton, M. A., D. M., F. R. C. P. With the assistance of C. P. Symonds, M. A., D. M., F. R. C. P. and others. Fifteenth edition. Cloth. Price \$8.50. Pp. 1136 with 175 illustrations. Baltimore: William Wood & Company, 1930.

The first edition of this book appeared in 1890. In the succeeding forty-six years there have been fifteen editions, the next to the last one of which came out in 1930. The new edition makes its appearance considerably revised and rather extensively changed, although the general arrangement of the previous editions is followed. To enumerate all the new features that have been incorporated would require unnecessary space, suffice it to say that the book has been brought to date. Incidentally the section on diseases of the tropics has been almost entirely rewritten. The first section deals with the infectious diseases and is preceded by an introductory chapter or section which explains in goodly part the mechanism of production of disease and disease signs in infectious diseases. The first subdivision has to do with diseases due to the ultrafiltrable viruses of unknown origin, then come Rickettsia diseases, represented solely by trench fever, the bacterial infections, the mycoses and the disorders due to spirochetes. The succeeding sections follow much the same order as most textbooks starting with diseases of the organs of respiration, followed by diseases of the nose, throat and ear. This portion has been largely rewritten. Next come diseases of the organs of circulation, the organs of digestion, metabolism and internal secretions and so on until the reader reaches an extensive section somewhat over 160 pages, on diseases of the skin. The last main division has to do with diseases of the tropics.

It is always difficult for an editor or the author of a textbook on medicine to know just where to place certain diseases. It seems odd to find almost all the rickettsial diseases listed under diseases of the tropics. Certainly Rocky Mountain spotted fever, as the name implies, would not by the broadest stretch of the imagination be called a tropical disease, nor does it seem logical to include amebic dysentery in the same category. Tularemia, a disease almost peculiar to the United States, is likewise considered a tropical disease, as is hydrophobia, another example of unusual classification. It is an old custom to include diseases of the skin in a book on internal medicine. It would seem much more sensible to use the nearly 200 pages devoted to dermatoses to a more complete and fuller discussion of pathologic physiology and treatment than is allowed in the present volume.

For the most part the material is well presented and lucidly written. There are many variants in an English textbook as contrasted with one written in the United States. The section on diseases of the heart makes an excellent example. In the first place there are a considerable number of arteriographic and polygraphic illustrations, methods of studying heart disorders which have been almost totally discarded in this country now that the electrocardiogram has been popularized. The terms compensation and failure of compensation are employed repeatedly. The lesions of the heart which are essentially of pathologic interest are rather full but the etiologic diagnoses are not incorporated in the text. No note is made, for example, of syphilitic heart disease or arteriosclerotic heart disease as such. On the other hand, rheumatic fever in toto is placed

in this section despite the fact that the lesions of rheumatic fever are essentially the result of infection and that other systems besides the cardiovascular may be involved in this disease. An extremely important condition, coronary occlusion is dismissed in one paragraph. Another peculiarity is that the various valve lesions are discussed individually and not in relationship to definite etiologic entities. The references to diseases of the organs of circulation, some seventy-three in number, are almost entirely English. There are four references to articles appearing in American journals, two of which are incompletely given.

The section on diseases of the blood, spleen and lymphatic system is reasonably complete, but it would certainly seem desirable to explain the mechanism of production of pernicious anemia. The reader is compelled to draw on his imagination when he comes across the term "extrinsic" factor, the quotation marks appearing as such in the text. There is certainly no note in the preceding portion of the section to explain what is meant by factors, either extrinsic or intrinsic. The macrocytic anemias, called megalocytic, are briefly described but no mention is made of that which occurs sometimes in advanced liver disease. It is doubtful whether pentnucleotide should be recommended for granulocytopenia.

From the comparatively few examples of what would seem to be sharp criticism, the implication might be that the book is not all that it should be. It would seem that the differences in terminology, variations in the consideration of disease and variances in therapy between English and American standards and customs would make the book a little difficult for use by the average American practitioner or student.

Der tuberkulöse Primärkomplex im Röntgenbilde Eine kritische Studie von J. P. Slooff, Kinderarzt am R. K. Krankenhaus O. L. Vrouw Meeder van Barmhartigheid, Eindhoven, Nr. 63. Tuberkulose Bibliothek, Behefte zur Zeitschrift für Tuberkulose. Herausgegeben von Dr. Franz Redeker, Oberregierungs- u. Obermedizinalrat Berlin und Dr. Karl Diehl, Dirigierender Arzt Sommerfeld. Paper. Price 8 marks. Pp. 80 with 61 illustrations. Leipzig: Johann Ambrosius Barth, 1937.

This excellent monograph on the tuberculous primary complex in the roentgenogram points out, in the introduction, that the combat against tuberculosis in children begins with the prevention of infection and therefore must consider following the infected individuals. The greatest significance pertains to the early stage of the disease when the process is limited to the primary complex, which in most cases is situated in the lung. To determine these cases, a periodically repeated tuberculin test and x-ray study are valuable. Physical examination of the lungs in these forms of tuberculosis possess little or no value. Roentgenology is viewed as the pathologic anatomy of the living. The studies reported are concerned with variations of the primary tuberculosis of the lungs (primary complex) in the x-ray examinations. The literature is reviewed from the point of view of (a) the anatomic literature and (b) the roentgenologic literature. In the anatomic review the Küss (18-5) Parrot (1876) gland-lung combination is cited with Georges Küss, in 1899, almost presenting the advances of modern initial tuberculosis, which was verified by E. and H. Albrecht, with Ghon giving the distributional data and Tendeloo accentuating collateral inflammation. While Tendeloo, Puhl and Koch indicate the primary foci to be where movement energy is greatest, Engel localizes them where the bronchi are shortest. Satas does not view primary complex as the first infection but as the first pulmonary change occurring. Engel clarified the glandular topography of the chest. The roentgenologic phases centered on the chest shadows and "free lung fields" which are veiled by the shadows of the ribs and soft parts. The marginal distinctness is influenced by the distance from the photographic plate. The air content of the pulmonary tissues also may cause deviations. Gräff and Küpfert using the Aschoff and Nicol scheme, stated that the density of the shadow increases with the density of the focus, but they were not particularly concerned with the primary complex. Ballin and Bigler found that small and even larger foci in vascular shadows might not be disclosed, while others found primary foci masked by shadows of the heart and liver, rib hilus and interlobular pleuritis. Bigler found that encapsulated and even calcified primary foci cast a definite shadow over 1 to 15 cm. No wonder Engel viewed the clinical appearance of the primary

complex to be that of bronchial gland tuberculosis. Redeker introduced the term "primary infiltration" to include the primary focus and collateral inflammation. Engels' correlation with the postmortem appearance was valuable. The author follows Engel's nomenclature. The 'butterfly' hilitis shadow is considered important in tuberculosis as is the blurring of the heart shadow. The author's technic and interpretation was based on twenty postmortem studies in cases of tuberculous meningitis: three of 1 year or younger, three of about 2 years, three of 3 years, one of 4 years, two of 5 years, two of 6 years, one of 7 years, three of 10 years, one a girl of 17 years, and a woman of 22. The roentgenogram before death was compared with the lungs after death. The technic used is detailed. The studies revealed twenty-five primary complexes of various extents. Twenty of these were found in the right and five in the left lung. In two cases two primary foci were found in one case three and in another case two groups of three or four foci which must be considered primary. The macroscopic appearance post mortem was compared with the x-ray appearance just prior to death. The dorsoventral x-ray examination with present day technic gives scant information on the extent of the variations present. This monograph should prove valuable to physicians and roentgenologists interested in childhood tuberculosis and the primary complex as well as to those interested in the problem of tuberculosis as a whole. It is well written and suitably illustrated.

Anestesia de base pela dialilmalonilurea (Estudo clínico e experimental) Pelo Ovidio Unti, assistente da Faculdade de farmacia e odontologia da Universidade de São Paulo. Tese Inaugural apresentada á Faculdade de medicina do Paraná. Paper Pp 172 with illustrations. São Paulo [n. d.]

This work, in Portuguese, deals with almalonylurea, a compound (diallylbarbituric acid, curral, diallylmalonylurea or dial) which is already used in general surgery. After experiments with animals, by using dial the drug was tried as a preanesthetic hypnotic, basal anesthetic and general anesthetic. Its action was compared with several other general anesthetics, especially barbituric compounds which have similar pharmacologic characteristics. Dial is classified among the narcotics of medium strength; it has an anesthetic effect of longer duration than sodium evipal or eunarcon and of shorter duration than somnifen and pernocton. Dial may be administered intravenously by slowly injecting a solution of the drug into a vein in the arm, and it also may be administered intramuscularly or orally. The dosage varies according to the individual and whether or not the effect desired is a basal anesthesia or a preanesthetic hypnosis. As a basal anesthetic the dose is 1 cc (0.1 Gm) of a 10 per cent solution for each 10 Kg of body weight. The patient may fall into a profound sleep at the end of the injection but as a rule, it takes from two to thirty minutes to induce sleep. Therefore it is recommended that thirty minutes should elapse and then, if necessary, minimal amounts of an inhalation anesthetic should be added. The inhalation anesthetic may also be used during operation when the need arises. When intravenous injection is not possible dial may be administered intramuscularly from forty to sixty minutes prior to operation. The anesthetic action is not as effective when the drug is administered by this route. The length of hypnosis is from a half to one and a half hours. As a preanesthetic hypnotic the dose is from one to one and one-half tablets or from 35 to 45 drops the evening before operation, and one hour before operation 0.5 cc (0.5 Gm) of a 10 per cent solution of dial for each 10 Kg of body weight is given in tablet form, in drops or by injection.

The author divides his work into three parts. The first part concerns general rules for anesthesia, especially for administration of the barbiturates (evipal, eunarcon, soneryl, numal, amtal, somnifen, pernocton and others). There also is a short description of the synthesis of dial. The second part deals entirely with the author's experimental work with laboratory animals (rats, dogs and guinea pigs) by using hypnotic or toxic doses of dial. The action of the hypnotic on the acid-base balance, leukocytes, erythrocytes, smooth and skeletal muscles, circulation and respiration was verified. The liver and kidneys of the animals were submitted to anatomicopathologic examinations. From these studies the author draws the following conclusions. When dial is administered in narcotic doses it has

no harmful effect on the organism of the animals studied, but toxic doses administered to animals produce a rapid and profound narcosis, accompanied by tonic and clonic convulsions, mydriasis and rapid death. Histopathologic studies of the liver and kidneys of the animals that received toxic doses showed degenerative changes. The narcotic dose has practically no harmful effect on the liver and kidneys, and these doses do not interfere with the respiratory rhythm. They produce general relaxation of all muscles. Toxic doses cause a diminution of the respiratory rate and sometimes produce respiratory arrest. In the third part of the study, the author describes the action of the anesthetic on the human being and gives the results of the necessary biochemical investigations. He reports the results in forty-five cases in which dial was used either as a preanesthetic hypnotic, basal anesthetic or general anesthetic, and draws the following conclusions.

Dial is efficient as a basal anesthetic and sometimes as a general anesthetic and, therefore, may be placed among the preanesthetic hypnotics and basal anesthetics. Dial induces anesthesia which lasts for an optimal length of time and which is sufficient for any surgical operation. The duration of anesthesia varies from twenty minutes to one and a half hours at the most. The patient loses and gains consciousness without any disagreeable sensation, and in the postoperative period the patient rarely vomits. Agitation and restlessness, which occur so commonly when anesthesia is induced by other barbiturates, rarely occur when dial is used. If the technic of administration of the anesthetic and the dose of 1 cc (0.1 Gm) of a 10 per cent solution for each 10 Kg of body weight is followed strictly, agitation and vomiting are avoided. Dial is an excellent addition to general or spinal anesthesia, when administered in a small dose, either orally or intramuscularly. It is an anesthetic that is easily administered, except by rectum. Although the anesthetic produces perceptible muscular relaxation, the use of an inhalation anesthetic is recommended for a short time as an additional anesthetic to obtain complete muscular relaxation. The author observed no toxic effects, even in debilitated subjects. Variations in blood pressure were usually very slight; there was a moderate rise in the systolic and diastolic pressures, therefore the drug attenuates the fall in blood pressure caused by operative maneuvers on the abdominal organs. There is no noticeable alteration of the pulse or respiration. Dial does not interfere with the acid-base balance, the blood sugar, the blood urea or the hemoglobin. The only cases in which dial is not recommended are those in which there is disease of the liver or kidneys. The author says that by continuing his studies he can prove that dial produces a more suitable anesthesia than that produced by inhalation anesthetics.

The results presented are interesting to those who are concerned with the use of the barbiturates.

Medical Urology By Irvin S. Koll, B.S., M.D., F.A.C.S., Attending Urologist, Michael Reese Hospital, Chicago. Cloth. Price \$5. Pp. 431 with 98 illustrations. St. Louis: C. V. Mosby Company, 1937.

The author's purpose, as stated in the preface, is to present the subject in such a manner as to be of practical value to the general physician and an aid to the medical student. The subject is divided into five parts. The first is devoted to diseases of the urethra and genitalia, the second to venereal ulcerative lesions of the external genitalia and adnexa, the third to diseases of the kidneys and ureters, the fourth to diseases of the urinary bladder, and the fifth to sexual impotence and sterility. The usual conception of urology as a surgical specialty is disregarded and, in keeping with the title of the book, the discussion is devoted to diagnosis and treatment, the technic of operations being omitted. The chapters on gonorrhea and complications in both male and female are excellent. Deserving of special mention is the chapter on venereal ulcerative lesions, which includes chancroid, erosive and gangrenous balanitis, granuloma inguinale and venereal lymphogranuloma. It is not a full text as evidenced by the omission of tumors of the testes, kidneys and bladder. Malformation and anomalies receive scanty mention. The portion devoted to diseases of the kidneys and ureters and the bladder would for the most part be considered orthodox urology. In the chapter dealing with instrumental treatment of infections of the kidney, the statement that any medical man in one month can be trained sufficiently in the

technic of ureteral catheterization to treat this type of case satisfactorily" is deplored on the ground that unless an expert is available the treatment had better be dispensed with altogether. A chapter on nervous diseases deals with the functional and symptomatic and the organic diseases affecting urination. Syphilis of the bladder is given a short chapter, which will be of interest to the general physician as well as to the urologist. A final chapter on differential diagnosis will be of especial interest to students. On the whole the book is well illustrated, readable, concise and practical.

Surgical Treatment. A Practical Treatise on the Therapy of Surgical Diseases. By James Peter Warbasse M.D. F.A.C.S. Special Lecturer in the Long Island Medical College and Calvin Mason Smyth Jr. B.S. M.D. F.A.C.S. Assistant Professor of Surgery in the University of Pennsylvania. In three volumes with separate index. Second edition. Cloth. Price \$35 per set. Pp 906 782 798 131 with 2 486 illustrations. Philadelphia & London W. B. Saunders Company, 1937.

Because the author makes no attempt to discuss diagnosis or pathology, he succeeds in covering a much larger field than would seem possible. The aim is mainly toward the active practitioner. An effort is made to discuss the therapeutic questions that may confront the average surgeon. It cannot therefore be classified as a textbook. There is no bibliography and the style is in the personal narrative form. The author states that for each disease he describes at least one technic which any average surgeon is qualified to try. Surgical competence, however, is still a matter of individual variation and many of the operations described are not within the technical scope of most men. The longest sections are devoted to the more common surgical problems. For example, Colles's fracture of the wrist is given comparatively thorough attention as far as treatment is concerned, while others, such as fractures of the carpal bones, are no doubt underemphasized. The treatment of appendicitis is set forth satisfactorily and, while only the classic McBurney incision is described in detail, other modes of therapy are suggested and the complications are well handled. The author's suggestion of right rectus incision for the less experienced is good and is indicative of the tone in which the writing is done.

The scope of this work is ambitious. It begins with general surgical principles and ends with a chapter on medical economics. The last, although not scientific, is interesting. The author's position on cooperative medicine is well known.

There are chapters on physical therapy, surgery of ailments and injuries of the new-born, gas poisoning and first aid. The section on anesthesia is fairly complete and there are numerous hints and suggestions as to methods of choosing local and general anesthetics. Surgery of the head and brain, gynecologic surgery and genito-urinary and pelvic surgery are included. Surgical treatment of diseases of the eye, ear, nose and throat is discussed under the section on the head and, while naturally incomplete because of obvious limitations, includes most of the conditions the general surgeon is called on to treat. Tonsillectomy is described in detail and in a practical manner, the method of enucleation being given first choice. There are descriptions of standard abdominal operations with the usual slight personal modifications in technics. A helpful adjunct is the inclusion of dietary regimens and schedules, so that the whole therapy of a peptic ulcer is given together. Preoperative and postoperative care is also well handled, including the administration of fluids and the use of nasal suction and other more recent devices. An interesting point is raised with the suggestion that the internist devote more time to postoperative care and that he be consulted earlier postoperatively and have joint charge of the patient. Wherever possible the author gives much medical and therapeutic advice which is not directly operative but which is part of the treatment in general.

The illustrations are numerous, skilfully drawn and clear. Some of the photographs are of doubtful value and may be unnecessary. The arrangement of the subject matter is a bit difficult because of the absence of pathologic and diagnostic features, which are as necessary to classification as is anatomy, and this occasionally spoils the continuity. But this is no real drawback and serves at times to economize space. On the whole, this surgical treatise may be recommended to every general practitioner and to the average surgeon as a practical addition to the library.

Les hyperglycémies. Étude clinique et physiopathologique. Par H. J. Warembourg médecin des hôpitaux de Lille. Préface de MM. les Professeurs Loeper et Polonovski. Papier. Price 65 francs. Pp 551 with 21 illustrations. Paris. Masson & Cie 1936.

This comprehensive monograph, combining a keen and critical review of the hyperglycemias with experimental work, deserves universal recognition. The author blends his scientific experience in the laboratory of biologic chemistry and the wards of the medical clinic in the charity hospital in Lille with a wide knowledge of the literature of hyperglycemia, of which the volume includes approximately 1,800 references. The latter is particularly valuable for American readers because, although the American literature is freely quoted, many articles that might escape attention in the foreign literature are mentioned. The volume consists of a preface by the heads of the department of biologic chemistry and of clinical medicine. The first portion of the book analyzes the subject of hyperglycemia from a general point of view and the results of the author's researches on the constitution and significance of the total undetermined carbon of the blood plasma. In the second part the hyperglycemias as produced physiologically and experimentally are discussed, with application to the glycoregulatory functions as seen in the clinic. In the third portion is a study of diabetic hyperglycemia, diagnostically, prognostically and from the point of view of treatment. The aid which the determination of the residual carbon of the plasma brings to a solution of these problems is developed in detail. In the fourth part the pathologic hyperglycemia of nondiabetic origin is considered. This includes hyperglycemia in the diseases of the liver, heart, lungs, endocrine glands, digestive system and nervous system. Further more references are made to disturbances of carbohydrate metabolism in infections of the skin, cancer, postoperative disease and obesity. The whole volume attempts to clarify this complex problem of hyperglycemia and to portray it in relation to facts and bring practical conclusions for clinical work on the amount of glycemia and an appreciation of the measure of the intermediary derivatives of glucidic metabolism in the plasma as determined by the index, *chromique résiduel*.

Report of the Seventh Australian Cancer Conference Held at Melbourne 4th-8th May 1936. Commonwealth of Australia. Papier. Pp 19 with 9 illustrations. Canberra. L. F. Johnston 1936.

This report contains a general review of developments in cancer control in Australia during 1935 by Dr. M. J. Holmes, the review of the activities of the Commonwealth X-ray and Radium Laboratory and the physical services in the states for 1935 by Dr. C. E. Eddy, the review of developments of cancer control in New Zealand during 1935 and a review of Australian cancer mortality statistics by Dr. Holmes, as well as the paper read by Dr. Eddy on *Some Recent Developments in Radiological Physics*.

From the general clinical point of view the cancer statistics presented by Dr. Holmes are most interesting. The mortality statistics demonstrate definitely that the mortality curve from cancer shows a steady tendency upward although fluctuations do occur. This increase is in definite relation to the older age grouping of the population, as is also shown elsewhere. Most interesting, however, is the proportion which cancers of the different organs have in this increase of cancer mortality, which is not explained by the change of age distribution alone or by the improvement in diagnostic or therapeutic facilities. Cancer of the tongue shows a definite diminution of the mortality rate in men, whereas the death rate from cancer of the tongue was 39 per hundred thousand of mean population in 1908, 1934 showed a death rate of 29. The death rate from cancer of the female genital organs on the other hand shows an increase from 153 in 1908 to 212 in 1934. The increase for the decade 1913 to 1923 was 16 for the decade from 1923 to 1933 it was 46. In a similar manner, cancer of the female breast shows an increase from a death rate of 10.2 in 1908 to 20 in 1934. The rise in the mortality rate of cancer of the breast shows a 96 per cent increase in the past twenty-six years as compared with a 38 per cent increase in the mortality rate of cancer of the female genital organs.

Cancer of the rectum and anus shows a rise in the mortality rate. In men there is an increase of 170 per cent in the past

twenty-six years, in women of 39 per cent. In cancer of the digestive tract considered together (esophagus, stomach, intestine, rectum and anus) an increase of 120 per cent in men and of 87 per cent in women is noted between 1908 and 1934. In cancer of the skin the mortality rate in men rose steadily until 1918, from 3.1 in 1908 to 5 in 1918. Since then the rate has been lower (3.4 in 1928 and 4.2 in 1934).

These statistics show, therefore, in agreement with those by other authors, a definite difference in the change of incidence of the cancer mortality for cancers of different organs. These changes are not wholly explainable by an improvement in the conditions of diagnosis and treatment. Cancer of the female breast, for example, shows an increase in spite of the fact that certainly the chances for early surgery have improved. The mortality rate for cancer of the female genital organs has increased considerably in spite of improvement in the conditions of treatment today. On the other hand, in cancer of the tongue, for instance, a definite decrease is noted although the conditions for treatment have not been much improved.

Principles and Foibles of Cancer Research in Regard to Etiology and Nature. By William Rlenhoff, Sr. M.D. F.A.C.S. Paper. Price \$2.50. Pp. 200. Baltimore: Waverly Press, Inc. 1936.

The author discusses the different phases of cancer research from a rather philosophical watch tower. The details of the elaborate discussions are not suitable for review. The general scope is best indicated in the author's own words: "For the most part the proposed explanatory theories are mere paraphrases of existing obvious conditions. Others are theoretical speculations, visionary hypotheses or rather guesses, unsupported by concrete facts. Imagination has been given free scope; regard to facts has given way to arbitrary autochthonous ideas, of which there has apparently been no dearth."

Radiumdosimetrie. Verfahren und bisherige Ergebnisse. Von Dr. Karl G. Zimmer, Assistent an der Strahlenabteilung des Cecilienhauses Berlin Charlottenburg. Mit einem Vorwort von Priv. Doz. Dr. A. Pickhan, Direktor des Cecilienhauses. Fortschritte auf dem Gebiete der Röntgenstrahlen. Ergänzungsband XLIX. Paper. Price 6.50 marks. Pp. 40 with 33 illustrations. Leipzig: Georg Thieme, 1936.

This booklet gives a convenient survey of the methods of radium dosimetry. Its title expresses at the same time the fact that the field is still in a developmental state and that this publication presents only the present situation without claiming final disposition of the problem. Radium dosimetry is discussed from two points of view: first as what the author calls "relative dosimetry" dealing with the special distribution of radiation in the neighborhood of radium preparations and, second, "absolute" dosimetry. This is the investigation of the practicability of a unit of dosage and its realization. In the first part, on relative dosimetry, the ionometric method is discussed and the instruments described; the photographic biologic methods of radium dosimetry as well as the mathematical methods are also discussed. This chapter is concluded by a comparative investigation of these methods, in order to draw conclusions concerning the range of applicability of each. In the second part on absolute dosimetry the roentgen is accepted as the suitable unit for gamma ray dosage, and the problems related to these measurements are discussed. In an appended chapter on special problems of radium dosimetry the situation with regard to the radium bomb and the measurements for adequate protection are discussed.

Hypnotic Power: Its Cultivation, Use and Application to Psychotherapy. By Colin Bennett. Cloth. Price \$1.50. Pp. 158. New York: F. P. Dutton & Co., Inc. 1937.

This small book, from British sources, is apparently written by a layman for laymen. The author states frankly that the book aims no higher than to be a psychotherapeutic "home doctor." For those who wish to learn the art of hypnotism, much information, based on actual experience, is here recorded. The author's plea that the "ordinary person" be allowed to practice hypnotism is not in accord with the best standards of medicine. There are many qualified physicians, at least in the larger medical centers, who use hypnotism as a form of treatment. The need for lay hypnotists is not so urgent as the author would have us believe.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts. Agranulocytosis in Relation to a Fall.—The workman, about 51 years old, during the course of his employment reached up to remove a tag from a small "blister" car standing on a narrow gauge railroad track 30 inches wide, which track rested on a dirt fill about 12 inches high. Without any apparent outward cause he slipped slowly to the ground, endeavoring to check his fall by holding on to the car, which was not in motion. He attempted to rise but was apparently unable to do so. So far as the evidence showed, the fall produced no contusion on his body. The workman was taken home, where he remained under treatment for about five months. On the occasions when he was out of bed he walked with great difficulty and with a spastic gait. His back gave him much pain, and his legs, as well as an area near the lower end of his spine, seemed numb. Prior to the time of the fall, he was usually able to walk without difficulty, although as early as 1926 he had symptoms of numbness and trembling of his feet and fingers, and on occasions pain over the distribution of the left sciatic nerve. He died October 6 from agranulocytosis, according to the physician who attended him. His widow instituted proceedings under the workmen's compensation act of Texas and, from a refusal of the industrial accident board to grant compensation, appealed to a state court. Because of diversity of citizenship, the action was removed to the federal district court, which directed a verdict for the defendant, and the plaintiff appealed to the United States circuit court of appeals, fifth circuit.

Previous to his fall in 1935, the workman had suffered from a long series of ailments. Prior to 1925 he had developed pulmonary tuberculosis for which he underwent treatment in a sanatorium. As early as 1925 he suffered from backaches and had a chronic sinusitis and quinsy. In 1926 he complained of vertigo and constant backache, and suffered with severe digestive disturbances, dysentery or other intestinal trouble. On two occasions in 1926 and in 1927, when under the stress of excitement or anger, he fainted. Excitement and anger seemed to cause a return of diarrhea, with which he was frequently affected. In December 1933 he was again suffering from diarrhea, fever, vomiting and dizziness, and Aug. 13, 1934, he sustained an injury to his back, which developed into a typical lumbago, which incapacitated him for eleven weeks. During these various illnesses, beginning as early as 1925, the workman took a "prepared medicine, a coal tar product, the use of which if continued for a long length of time results in granulocytosis [agranulocytosis], a disease of the blood which destroys the white blood cells leaving the body without adequate defense against infection." The testimony of the physician who attended the workman at the time of his death, and that of another physician who had treated the workman intermittently for ten years, was to the effect that there was no causal connection between the fall and the death.

The widow contended that her husband died from a compression myelitis of the spinal cord resulting from the physical violence of his fall and in support of this contention called attention to the workman's spastic gait and paralysis and numbness of the lower extremities as being symptoms of a compression myelitis. The undisputed testimony was that some form of external violence sufficient to injure the bone is necessary to produce a compression myelitis. There was no testimony, the court said, medical or lay, that the workman suffered from myelitis or that his fall was of sufficient violence to cause a compression myelitis. The widow's assertion that her husband died from that disease rested on no foundation other than the presence of symptoms which are common both to myelitis and to agranulocytosis. A verdict for her on the theory that the workman died of myelitis would, the court said, be directly opposed to the unequivocal and uncontradicted testimony of the physician who attended the workman at his death who said that death was due to agranulocytosis and of the testimony of

both that physician and the other physician who attended the workman for ten years, that the fall had no causal connection with his death. When this uncontradicted testimony is viewed in connection with the workman's extended medical history, the court concluded, and the uncontradicted evidence of his continued use of a "prepared medicine which will ultimately cause granulocytosis [agranulocytosis]," and there being no substantial evidence to support the widow's theory of death from myelitis or that the fall was of sufficient violence to produce a myelitis, only one reasonable inference can be fairly and reasonably drawn, and that is that the workman's death resulted from disease unconnected with the fall. A contrary conclusion would be wholly conjectural.

For the reasons stated, the judgment of the district court for the defendant was affirmed.—*McVerry v Fidelity & Casualty Co of New York*, 87 F (2d) 963

Insurance, Accident Abscess of Brain in Relation to Overexertion—The defendant insurance company promised to pay certain benefits if the insured died as a result of external, violent and accidental means. The insured, aged 40 years, was a strong, healthy, well nourished and robust person, accustomed to performing hard labor. On March 30, while attempting to lift a 95 pound sack of cement into a wheelbarrow, he suddenly lost the use of his legs and fell to the ground. He was lifted into an automobile and after receiving medical attention at the office of a physician he was taken home and put to bed. At that time he was in a semiconscious condition, was pale, and was still unable to use his legs. That afternoon he was removed to a hospital. An examination made of his heart, lungs, eyes, ears, bladder, liver and nose disclosed no defects in any of them. His temperature and pulse readings were normal. Fifteen days later, on April 15 his temperature began to rise and his pulse rate increased. From a normal reading of 20/20 on April 5, the vision of both eyes was reduced to 20/200 on April 18. He gradually grew worse, went into coma and died April 18. A postmortem examination disclosed an abscess of the brain, which admittedly was the cause of death. The insurance company refused to pay the benefits provided in the insurance policy, contending that there was no evidence that the death was caused through external, violent and accidental means. The plaintiff, as beneficiary, brought suit, and from a judgment against it in the trial court the company appealed to the appellate court of Illinois, fourth district.

An expert witness for the beneficiary testified that the abscess of the brain from which the insured died began about April 14 or 15, when the hospital records showed that the insured had a high temperature and his pulse rate was above normal and his vision was greatly reduced. At the time the insured lifted the sack of cement in the opinion of this witness, there was an alteration or impairment in the circulation of the blood supplied to the brain, caused either by a small hemorrhage or by the break or rupture of a blood vessel in the brain, and that this condition resulted in a thrombosis, which comprised the seat for an infection which later developed, causing the abscess in the brain. He testified that the lifting of the sack would or could have been sufficient to produce a hemorrhage or rupture of a blood vessel in the insured's brain and that from the evidence contained in the hospital records the deceased had no other condition or infirmity which could be the cause of death. The appellate court adopted a definition of "accidental means" laid down by the Supreme Court of the United States in *United States Mutual Accident Association v Barry*, 131 U S 100, 9 S Ct 755, as follows:

that if a result is such as follows from ordinary means voluntarily employed in a not unusual or unexpected way it cannot be called a result effected by accidental means but that if in the act which precedes the injury something unforeseen unexpected unusual, occurs which produces the injury then the injury has resulted through accidental means.

In view of the foregoing definition the appellate court thought that the jury committed no error in finding that the death of the insured resulted from external, violent and accidental means independent of all other causes. The evidence continued the court showed a complete chain of circumstances from the time the insured left his home on the morning of the accident until the hour of his death. There was no intervention of time unaccounted for, and the jury was warranted in view of the

facts proved and in the absence of any testimony as to any other cause of his death, to infer that the disability he sustained in attempting to lift the sack of cement was the proximate, sole and only cause of his death.

The judgment for the beneficiary was therefore affirmed.—*Paoli v Loyal Protective Ins Co (Ill)* 6 N E (2d) 960

Hospitals Liability for Tuberculosis Contracted by Baby from Nurse—The plaintiff's son was born at the defendant hospital, June 19, 1935, and during the next six days it was attended by nurses in the maternity ward. One of these nurses had a severe cold and a chronic cough which had been present for about six weeks. She was subject to severe coughing spells and some of the seizures took place while she was caring for the baby. The nurse did not use a mask, as was required by the rules of the hospital to be worn by nurses when attending babies, but did cover her mouth with her hand during a coughing spell. While her chronic cough and cold were well known to the other nurses and patients in the maternity ward, the nurse did not report her condition to the superintendent of the hospital. On or about June 25, an x-ray examination of her chest failed to reveal positive evidence of pulmonary tuberculosis but tubercle bacilli were found to be present in her sputum and she was placed in a sanatorium. On June 30 the baby was taken home from the hospital. Within two weeks thereafter it became ill and was returned to the hospital. It died, August 22, from acute miliary tuberculosis. The plaintiff, as special administrator of his son's estate, sued the hospital alleging that his son's death had been caused by its negligence. The jury returned a verdict for the plaintiff and when the trial court denied the hospital's motion for a judgment notwithstanding the verdict, the hospital appealed to the Supreme Court of Minnesota.

There was sufficient evidence in the opinion of the Supreme Court to sustain the jury's finding that the disease from which the baby died was contracted from the nurse. While the superintendent of the hospital testified that she would have relieved the nurse from duty had she reported her condition, as the rules of the hospital required, yet it appeared that the superintendent visited the maternity ward at least once each day and the court could not conceive how the superintendent could have been ignorant of the nurse's condition when it was known to the other nurses and to the patients. It was the superintendent's duty to exercise due care to see that her nurses were free from communicable disease, and the jury was justified in finding that she should have ascertained what was generally known and should have taken the nurse off duty. Even if the nurse had only a common cold, ordinary prudence would have prevented the hospital from permitting her to attend the babies, as the infectious propensities and the often serious consequences of the common cold are well known. The court further held that it was not error for the trial court to permit the hospital chart to be introduced in evidence, citing *Lund v Olson*, 182 Minn 204, 234 N W 310, 75 A L R 371.

The Supreme Court therefore, affirmed the order of the trial court denying the hospital's motion for judgment notwithstanding the verdict for the plaintiff.—*Taafe v St Olaf Hospital (Minn)*, 271 N W 109

Workmen's Compensation Acts Softening of Brain in Relation to Herniotomy—In February 1929 Jenneman sustained a hernia in the course of his employment with the defendant company. A herniotomy was performed but the hernia recurred in May 1930. On Dec 1, 1930 a second herniotomy was performed by one of the company's physicians. During his stay in the hospital for his second herniotomy, the employee contracted a cold and pleurisy on his right side and phlebitis in his left leg developed. He also had headaches, elevated temperature, and on two occasions while walking about the room in the hospital his right side became numb, his right leg weakened, and he fell. He left the hospital Jan 24 1931. He returned to work April 15 1931, and continued to work for fifteen days. During this time he lost interest in his personal appearance and family, constantly suffered pain on the left side of his head, could not use his right hand and in walking dragged his right foot. Later he was able to speak only with difficulty and was unable to write. His condition became worse and he died May 14 1932. His dependents

claimants, instituted proceedings under the workmen's compensation act. The commission denied compensation but the lower court reversed the commission's order and remanded the case. The defendants thereupon appealed to the Supreme Court of Missouri, Division No 1.

The medical testimony was in accord that the cause of the workman's death was softening of the brain, that the softening of the brain was caused by a thrombosis in a branch of the middle cerebral artery, that the thrombosis was caused by arteriosclerosis, and that the hernia did not directly cause death. The physicians called by the claimants testified that the last herniotomy caused the cold, pleurisy and phlebitis, that the pleurisy or phlebitis or both either caused or aggravated the arteriosclerosis, and that the arteriosclerosis in turn caused the thrombosis. On the other hand, the physicians called by the defendants testified that neither the hernia, cold, pleurisy nor phlebitis in any manner caused or aggravated the arteriosclerosis. They were of the opinion that the pain, dizziness and suffering experienced by the deceased after the last operation were due to "cerebral angiospasm."

The claimants challenged the testimony of a physician because he had submitted two reports of the autopsy, the first one failing to record the presence of arteriosclerosis in the region of the [middle] cerebral artery. But, said the Supreme Court, this physician testified that after submitting his first report he had continued the examination with the aid of a microscope which disclosed the arteriosclerosis. He further testified that he had submitted specimens to other physicians who made microscopic examinations, and all agreed that arteriosclerosis was present in the region in question. His submission of two reports on the autopsy was properly for the consideration of the commission in weighing his testimony.

In the opinion of the Supreme Court, the ruling of the commission denying compensation was supported by substantial evidence. Accordingly, the judgment of the lower court was reversed and the case remanded with directions to affirm the order of the commission—*Jenneman et al v Consolidated Underwriters Same v Scullin Steel Co (Mo)*, 100 S W (2d) 458.

War Risk Insurance Incipient Pulmonary Tuberculosis in Relation to Total and Permanent Disability—A finding of total and permanent disability sufficient to mature a war risk insurance contract cannot be sustained, said the United States circuit court of appeals, eighth circuit, on proof showing merely that tuberculosis was present in an incipient stage. The disease in its early stages is not an incurable malady and in a large proportion of cases it may become arrested so that the patient may engage continuously in some substantially gainful occupation—*United States v Cameron*, 87 F (2d) 61.

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine Philadelphia Oct 19-21 Dr Herman A Osmond 144 Commonwealth Ave Boston Secretary
American College of Surgeons Chicago Oct 25-29 Dr George W Crile 40 East Erie Street Chicago Chairman Board of Regents
American Society of Tropical Medicine New Orleans Nov 30-Dec 3 Dr N Paul Hudson Dept of Bacteriology Ohio State Univ Columbus Ohio Secretary
Association of American Medical Colleges San Francisco Oct 24-26 Dr Fred C Zapffe 5 South Wabash Ave Chicago Secretary
Inter State Postgraduate Medical Association of North America St Louis Oct 18-22 Dr W B Peck 27 E Stephenson St Freeport Ill Managing Director
New York State Association of Public Health Laboratories Albany Oct 29 Miss M B Kirkbride New Scotland Avenue Albany N Y Secretary
Omaha Mid West Clinical Society Omaha Oct 17-22 Dr J D McCarthy 107 South Seventeenth Street Omaha Secretary
Oregon State Medical Society Salem Oct 21-23 Dr Morris L Bridge 1020 S W Taylor St Portland Secretary
Society of Surgeons of New Jersey Trenton November 20 Dr Walter B Mount 21 Plymouth Street Montclair Secretary
Southern Medical Association New Orleans Nov 30-Dec 3 Mr C P Loranz Empire Bldg Birmingham Ala Secretary
Southern Surgical Association Birmingham Ala Dec 7-9 Dr Alton Ochsner 1430 Tulane Ave New Orleans Secretary
Western Surgical Association Indianapolis Dec 3-4 Dr Albert H Montgomery 122 South Michigan Blvd Chicago Secretary

THE AMERICAN RHEUMATISM ASSOCIATION

Fourth Annual Meeting and Sixth Conference on Rheumatic Diseases
held in Atlantic City N J June 7, 1937

LORING T SWAIM, M D, Boston, Secretary

(Continued from page 1250)

Gold Salt Therapy in Chronic Arthritis

DRS R GARFIELD SNYDER, FRANZ J LUST, CORNELIUS H TRAEGER and LEMOINE C KELLY, New York. Various preparations of gold have been used in arthritis, such as allochrysin, solganol, myoral, sanochrysin, myochrysin, lipaural, chrysalbum, lopion, aurocein and gold sodium thiosulfate. These salts contain varying concentrations of metallic gold, usually between 30 and 50 per cent. There are organic and inorganic preparations, and many may be administered intravenously or intramuscularly. There is a wide range in the dose that may be employed. It is obvious from the high percentage of toxic reactions obtained in the past that the doses commonly employed were too large. There is no doubt that all gold salts are toxic, some more so than others, but susceptibility to this medication varies with the individual. Some European observers are of the opinion that doses large enough to produce reactions must be employed in order to get the best clinical results. Forestier advises starting with small doses of 10 mg, gradually increasing according to the tolerance of the patient, if the patient seems to be benefiting by this type of therapy. Some workers who use gold salts intramuscularly started with doses of from 200 to 500 mg. However, most men use small doses when giving gold intravenously.

The exact explanation of the beneficial results of gold therapy is not known. We do know that gold is excreted to a large extent by the kidneys during the first twenty-four hours. The rest is deposited in the mesenchymal tissues and stimulates the reticulo-endothelial system or, in other words, stimulates leucocytosis. In order to avoid cumulative effects, most writers advise that injections be given once a week for eight or ten weeks, in the same way that arsphenamine is given, followed by a rest period of from one to two months. It is at present generally agreed that not more than 1 to 2 Gm should be given during each series in order to avoid cumulative toxic results.

In the Arthritis Clinic of the Hospital for Ruptured and Crippled we undertook a survey of 100 cases. In order to determine the true value of this therapy, we selected cases that had proved resistant to all other forms of orthodox treatment. Any degree of improvement in this group would indicate that gold therapy had a definite beneficial effect. In an effort to guard against toxic reactions we eliminated any persons with a history of skin, liver, kidney or intestinal irritability. In addition to this precaution we eliminated all patients who gave a history of blood dyscrasia, which is the most serious complication. Each patient had a complete blood count, urinalysis and sedimentation rate before starting treatment and at frequent intervals during the course of treatment. At the first evidence of skin irritation, treatments were stopped. Usually the first symptom is itching. A slight trace of albumin in the urine is not necessarily serious but should make one cautious, especially with regard to increasing subsequent dosage. In most of these cases we used gold sodium thiosulfate, administered intravenously in doses starting with from 5 to 10 mg, with gradual increase up to the point of tolerance, our largest single dose being 125 mg.

In our series we did not observe any spectacular results, but there seemed to be various degrees of improvement in about 45 per cent of the cases. We also observed some improvement in about 35 per cent of the patients with osteoarthritis, contrary to Forestier's experience. There were seventeen toxic reactions. In eleven of these the results were mild dermatologic eruptions, which persisted for from three days to a week. In one case the rash lasted two and a half months. Another patient was delirious for two days and had dyspnea as a result of edema of the glottis. This was finally relieved by tracheotomy. Both patients had only two injections of gold sodium thiosulfate given intravenously, the first of 10 mg and the second of 20 mg. Both completely recovered from arthritis after these severe toxic reactions subsided.

The conclusions reached were that 1 Gold sodium thio-sulfate can apparently be given intravenously in doses ranging from 10 to 125 mg without serious danger in the great majority of cases, provided reasonable precautions are observed in the selection. To avoid toxic reactions the first two or three doses should never be above 10 mg. Since gold salts are toxic and the best results are usually obtained by large doses, it is obviously not at present a safe drug to put in the hands of the general practitioner. 2 Our results show various degrees of improvement in 45 per cent of the cases, but these particular cases had previously proved refractory to every other orthodox form of treatment. 3 Gold therapy deserves further careful consideration and study in the well organized clinics of this country in an effort to arrive at a true evaluation of its worth in various types of arthritis, especially those that have shown no response to other well known forms of treatment. An effort should also be made to find out which salt is the most efficient and the least toxic.

DISCUSSION

DR H ARCHIBALD NISSEN, Boston. The *Cumulative Index Medicus* from 1932 through 1936 lists 3,229 articles on arthritis of which 976 dealt solely with treatment. On an average, 638 articles a year have been published for the past five years, and 195 (or 30 per cent) each year dealt with treatment. Of the 976 papers published in five years on treatment, 245 discussed general treatment, not any specific form of therapy. Of these papers on special types of treatment, eighty were on gold therapy. Apparently the first publication on gold therapy appeared in this country in 1936, and to date I find that only four others on this subject have been published in this country. Dr Snyder has organized and is carrying on a wonderful follow up of his group of patients, especially this group receiving gold treatment. I asked Dr Lust, who gives the injections, what he considered the outstanding results of the gold treatment, and he said primarily the reduction of pain, definite decrease in swelling, and an increase in the functional activity of the joint or joints involved. That was some months ago, he may have found out differently since then. He believed that the gold salt preparation assisted in the absorption of scar tissue formation. I am particularly anxious to hear what his yearly follow up on this same group of patients will show. At the end of a five year period, its actual value should be evident.

DR M HENRY DAWSON, New York. We are under a debt of obligation to Dr Snyder and his associates for their judicial appraisal of this controversial subject. I should like to endorse Dr Snyder's statement that gold salts are not a form of therapy to be used by the general practitioner. They should not be used by any one who has not had extensive experience. Their use is not unattended with danger. The second point concerns the therapeutic results. What we do not know sufficiently in rheumatoid arthritis is the natural course of the disease. The only follow-up series with which I am familiar is one of 140 cases reported by Schneyer. At the end of fourteen years 56 per cent of the patients were still able to earn their own living and 22 per cent were unimproved. That is the general experience—about one fourth do well, about 50 per cent improve with good medical care, and about one fourth do badly. To state that 60 or 70 per cent improve on this or that therapy has little significance. Dr Snyder's results in osteo-arthritis were apparently the same as in rheumatoid arthritis. That is contrary to the reports of Forestier. He states that gold therapy is not indicated in osteo arthritis. Copeland states that gold salts can even be actually harmful in osteo-arthritis. In Europe and on the continent the use of gold salts is confined to rheumatoid arthritis. It is difficult to explain the enthusiasm of the European workers. It may be as Dr Snyder says that we are not giving the right dose. It will be interesting to hear a follow-up report after a number of years.

DR K K SHERWOOD, Kirkland Wash. I have had a rather extensive experience with the use of gold salts in the last two years. I wish to emphasize one point with regard to toxicity. I have found that itching occurs prior to other serious complications. If the therapy is stopped at that time no serious trouble results. I think the difference between Dr Snyder's results in hypertrophic arthritis and the results of the European observers may lie in the type of case. I have found in

hypertrophic arthritis with neurologic symptoms a fair response to gold in control of pain. In the other types of arthritis the result was nil. In rheumatoid arthritis it does help to control the symptoms. Its use in the first two or three months of treatment is of value in giving the patient confidence and in gaining an initial response which enables one to continue further treatment.

DR JACQUES KRONER, New York. One must be careful in estimating results. May I say as one who used this gold therapy for the last five years that I feel that injections of gold salts are a valuable form of therapy in rheumatoid arthritis. Many of the speakers emphasized the good results secured in Europe. I deem it important to avoid toxic effects in the skin. I have witnessed three cases of fatal toxicosis following the use of gold therapy. Since there is now an American product, gold sodium thiosulfate, this remedy in skilful doses and only for rheumatoid arthritis gives good results. I know of only one other remedy which is able to improve the sedimentation rate as well as gold does, namely, bee venom. I believe that when one has a case of rheumatoid arthritis which is intractable to other forms of treatment one should use gold salts in the form of gradually increasing doses and so avoid toxicity. A condition *sine qua non* is a fairly good general condition, a perfectly intact renal function, and its regular examination during the administration of gold salts.

DR R GARFIELD SNYDER, New York. In evaluating the European results on gold therapy it must be remembered that spa treatment or other forms of physical therapy were used in conjunction with gold therapy. In our two years experience with gold therapy the sedimentation rate was not a reliable guide as to prognosis. In some cases sedimentation went down as the patient improved, but in others it remained at a more or less constant level. In some cases, however, it was actually increased. These results might be different over a five year period. Contrary to Forestier's report, we found that some benefit was derived from the use of gold salts in cases of osteo-arthritis. This would seem to indicate that in addition to degenerative changes there may be also a low grade infection present as a factor in the etiology of osteo arthritis.

Fatal Rheumatic Fever

DRS EDWARD F BLAND and T DUCKETT JONES, Boston. Since 1921 (sixteen years) approximately 1,500 children and adolescents under the age of 21 years have received hospital care at the House of the Good Samaritan for rheumatic fever and chorea. The subsequent course and present status of this large group are known. We have presented in this report data relevant to the 306 patients who have died. A postmortem examination was performed in seventy-four instances (24 per cent). Rheumatic fever has been the outstanding cause of death and was directly responsible for the fatal issue in 250 instances (82 per cent). The course of events in this fatal group emphasizes the importance of the early years after the onset of the disease. Furthermore, from the data presented it is evident that they constitute a critical period which determines in large measure the future course of the disease. The manifestations of severe rheumatic fever differ profoundly from the generally accepted clinical picture of the disease and are often confused with primary disease of the lungs (pneumonia), the kidneys (acute nephritis) or uncomplicated heart disease.

The Transportation of Rheumatic Fever Patients to a Subtropical Climate

DRS T DUCKETT JONES and PAUL D WHITE, Boston and C F ROCHE, JEAN JONES PERDUE and H A RYAN, Miami Beach, Fla. Since 1930, twenty six patients with rheumatic fever and rheumatic heart disease have been transported from the House of the Good Samaritan, Boston, to the St Francis Hospital, Miami Beach, Fla. The patients have been sent South in groups of four and six each year (save for the winter of 1935-1936) and have remained south during the winter season (from six to eight months). Five children have had two winter seasons each in southern Florida. The hospital care in the North and the South has been comparable. There was a decided annual variation in the improvement from transportation. Three patients died in Florida, two of continuous severe rheumatic fever and one of recurrent rheumatic fever after seven months in Florida. In eleven the rheumatic fever became

quiescent, in nine the rheumatic fever showed definite improvement, five were unimproved and two were worse. Four children are at present in Florida, in one instance it is the second winter season there. Recurrences of rheumatic fever occurred in Florida following sore throats, colds, unexplained fever and without apparent precipitating events. Since returning to Boston eight have remained well while twelve have had recurrences of rheumatic fever. Three patients died within a year after returning to Boston, and one in the second year. Forty further patients with rheumatic fever and rheumatic heart disease have been observed in southern Florida. The duration of their stay has been variable. Twenty-five had active rheumatic fever at the time they went south in Florida (after variable periods), sixteen of these became quiescent, six were unimproved, one was worse and two died. Recurrences were noted as in the House of the Good Samaritan group, and four of the recurrences followed severe sunburn (one fatal). Rheumatic fever and rheumatic heart disease subjects, living in such a climate, seemed to be protected to some extent but not invariably. In both of these series the patients with mild rheumatic heart disease or early mild rheumatic fever seemed to improve more strikingly, as would be expected. Caution is expressed with regard to the unquestionable value of transportation to a subtropical climate. Respiratory infections are frequently observed in southern Florida. Despite their frequency, hemolytic streptococcus infections are less common and less severe than in Boston, as shown by throat cultures and the development of hemolytic streptococcus immune bodies.

DISCUSSION

DR WILLIAM D STROUD, Philadelphia. The study reported by Drs Jones and Bland bears out the results of our study at the Children's Heart Hospital in Philadelphia. Although in the last fifteen years we have had only about 700 cases, as compared to their 1,500, and have not been able to follow those cases as carefully as they have, we have a death rate of 50 per cent, which is 7 per cent higher than their 43 per cent. There are several points in the first presentation, of Drs Jones and Bland, which help us clinically. First of all, of the children who died the vast majority died as a result of an upper respiratory infection reactivating rheumatic fever and not as a result of physical effort. We are therefore able to reassure the parents of these children that, in the average case, normal physical effort will not damage the heart so long as there is no evidence of rheumatic activity. The fact they had only seven sudden deaths bears out this point. The patient who lives in danger of sudden death from coronary disease is certainly in a different situation than the child with rheumatic heart damage and one must make sure both the patients and the parents realize this fact. In the second paper, Dr Jones and his associates have suggested that Florida and southern California are the best places for these patients during the winter months. I think that even those who live in those states must admit that they have damp, windy, cold days. If such days occur after an upper respiratory infection, the environment for from twenty-four to seventy-two hours is not much different from a little farther north. In Philadelphia we have used intravenous therapy and every week during the winter months have given the children whole blood of adults of nonrheumatic families. This has proved ineffective. At present we are interested with Dr Stokes in giving these children intravenously two or three times a week from 50 to 100 cc of whole blood from nonrheumatic persons past 35 years of age. I am not sure that they have been helped, although some seem to have benefited. If I had youngsters with rheumatic fever I should send them to New Mexico or Arizona.

DR M I SHAPIRO, Minneapolis. We have had a similar experience with our rheumatic patients at the Lymanhurst Convalescent Home in Minneapolis. A number of our patients have died soon after the inception of the rheumatic infection and, in some instances, died with congestive failure. However, it has been our experience that congestive failure is not common and that when it does appear it is relatively mild in this group of rheumatic patients who die young. These patients who die with congestive failure have a combination of a chronic valvular defect plus active carditis. Patients who have acute

carditis alone without valvular defect do not have congestive failure, they die rather because of toxemia. It is a question in my mind whether congestive failure due to chronic valvular defects of the heart should be included under the heading of "rheumatic fever." The question as to whether or not a patient has a persistent carditis is not always an easy one to answer. During the past month I have had under observation at Lymanhurst a patient who brings out the difficulties in settling this question. This 15 year old boy was admitted to the ward about three months ago, he gave a history of having sustained his first attack of rheumatic fever about seven months previously. When he was first admitted he had a high sedimentation rate, a low grade fever, a rapid pulse, in short, all the evidences of an active carditis. There was evidence of early mitral and aortic involvement. After three months of complete bed rest all clinical signs became normal. The patient began to gain weight and had a normal sedimentation rate, the heart rate was slower, and the murmurs remained the same. The patient's condition was considered quiescent and he was gradually permitted to be up and about. He had been on a full time hospital schedule including some outdoor activity for about a month during which time the sedimentation rate remained normal and all clinical signs indicated no active infection in his heart. At this time, however, the boy developed the signs of acute appendicitis and was referred to the Minneapolis General Hospital, where he was operated on and an acute gangrenous appendix removed. Unfortunately, the condition was complicated by a gas bacillus peritonitis, and the patient died in three days. On postmortem examination, there was found acute valvulitis involving the aortic mitral valves with no evidence of healing. In this instance all the clinical signs including the sedimentation rate did not give correct information with regard to the degree of activity in this patient's heart. Dr Jones's contribution will assist in making possible a final decision as to the effectiveness of a change in climate for rheumatic children. Since this experiment began I have had a number of instances in which rheumatic families in poor financial condition have denied themselves almost every necessity in order to be able to permit a child of theirs to live in Florida. As I considered the group of patients that Dr Jones reported on, it seemed to me that they were much like the rheumatic group we have in our own convalescent home, I could not notice much difference between this group that had been transported to Florida and our own patients. In spite of the fact that Dr Jones does not now have so favorable an opinion on the effectiveness of this type of treatment, I believe the experiment was fully justified, and I hope that it continues. The only way to prove this question is to transport at least a hundred rheumatic patients to some favorable subtropical climate and keep them there a minimum of five years. We have enough control patients in the North to be able to draw definite conclusions.

DR ARTHUR DEGRAFF, New York. Dr Bland has shown clearly the course of rheumatic heart disease in children. It should be emphasized again that the course of the disease is different when acquired at an early age than when acquired in adult life. There seems to be a definite trend toward a much shorter and more fulminating course when rheumatic heart disease begins in early childhood. I was interested to learn that the incidence of subacute bacterial endocarditis was 6 per cent in Dr Bland's group. That is about the same as has been found in adults. Apparently the susceptibility to this complication is not affected by age. A rather important difference between Dr Bland's group of children and our group of adults is the mode of termination. Only a small proportion of children died suddenly whereas in about 10 per cent of our adult group death occurred from embolism, infarction or thrombosis. The rarity of auricular fibrillation in children might in part but not entirely account for this, because 8 per cent of the adult group who did not have auricular fibrillation died suddenly. I should like to ask Dr Jones whether he believes from his own experience so far that children kept under good environmental conditions, properly supervised, such as they are at the House of the Good Samaritan, do not do as well as children sent to Florida.

DR HOMER T SWIFT, New York. The society is fortunate in having these two papers presented today. In Dr Stroud's

discussion the statement was made that a 50 per cent mortality rate was about the same as that encountered by him in the convalescent home he is conducting. In the 1,500 patients treated in the House of the Good Samaritan there were 300 deaths, which gives a rate of about 20 per cent, this seems surprisingly good and indicates a better prognosis than we are accustomed to give at the present time. Possibly these figures are weighted because of the inclusion of a large number of patients with chorea. Dr Emmet Holt always held that rheumatic children had a remarkable capacity for recovery, and this report supports such an opinion. The papers of Dr Jones and his co-workers raise at least two important points. 1. Do these observations settle the question so often asked by parents "Shall we take or send our rheumatic child South or West or keep it at home?" We can, at least, answer that such a procedure is not a panacea and that the child may suffer relapses in the supposedly favorable environment. From a statistical standpoint a more satisfactory answer could be obtained from observing several larger groups having rheumatic fever and rheumatic heart disease of comparable types and intensity. One treated in Florida away from frequent contact with persons having upper respiratory infection a condition frequent in Miami, another group in southern California, a third in Arizona or New Mexico, and possibly a fourth in the true tropics. Comparable studies are possible in rheumatic fever, just as they have been in tuberculosis and would probably lead to important therapeutic conclusions. 2. A theoretical question that is raised is that having to do with the etiology of rheumatic fever. A number of patients had relapsed with little evidence of preceding hemolytic streptococcus infection, and the several instances of severe rheumatic relapse following sunburn make it appear that trauma, both infectious and noninfectious, may play a role in inducing relapses, and it is possible that substances formed in traumatized tissues may have an important etiologic bearing.

DR MAY G WILSON, New York. It is well known that in the North the incidence of rheumatic fever is low in the summer season. I have found in a series of observations over a ten year period that the seasonal incidence of rheumatic fever in New York City ranges in summer between 1 and 4 per cent, as compared with an incidence of from 30 to 40 per cent in the spring and early winter months. The incidence of rheumatic fever in Florida would not be expected to exceed that of the summer incidence in the Northern states. Perhaps Dr Jones can give some comparable data. If climatic conditions are of importance in the occurrence of rheumatic fever, one might expect that in subtropical regions the observed course and severity of the disease would differ from that seen in the North. The observations reported concerned children who were transported during rheumatic activity and are therefore difficult to evaluate. The clinical improvement noted would seem to be comparable to that observed in convalescent homes in New York City. The series of subjects who were in Florida for a period of years constituted an older group, in which the tendency to recurrences is usually less. It is rather surprising to find such a high incidence of recurrences among this older aged group. The course of the disease in the first three decades in twenty representative rheumatic subjects shows that after puberty the incidence of recurrences is low (being 33 per cent for a total series of 225 subjects). During childhood the majority (87 per cent) of the children had one or more recurrences. Of importance are the varied number of years (from one to seven) of freedom from the recurrences in subjects living in the same environment throughout the period of observation. Before it can be said with any assurance that climate is an environmental factor of importance in this disease, it would seem advisable to transport children for successive years, at least until puberty. If it is found that the course of the disease is modified thereby, change of climate would be advisable for rheumatic children. I should like to ask Dr Jones whether he has any information as to the familial incidence of rheumatic fever in Florida. Is it as high as it is in the North? In some recent studies I have come to the conclusion that hereditary susceptibility would seem to determine the familial incidence of rheumatic fever. If the familial incidence in subtropical climates is found to be low, it would indicate that climate is an important environmental factor in this disease. It

might then be advisable for rheumatic families to live in the tropical climates. It has taken a great many years to accumulate data on the course of rheumatic heart disease in the North. I hope that Dr Jones and his associates will be able to continue their important investigations for many years.

DR W PAUL HOLBROOK, Tucson, Ariz. I should like to congratulate Dr Jones and his associates on presenting this interesting subject of transportation of these rheumatic fever children to Florida. Just what criteria were used in determining whether the case is quiescent? I have had a good deal of experience with this same problem in southern Arizona and my impression is that the incidence of recurrence is much lower than eleven reported recurrences out of twenty six patients that were transported to Florida. Such a study as Dr Wilson has suggested is under way with groups of rheumatic children coming to southern Arizona. At least fifty children have come under my observation in the last three years and there has been only one recurrence. Whether that proportion will hold through the entire series or not I do not know.

DR E STERLING NICHOL, Miami, Fla. Two years ago I presented a paper on this subject before this association. When Dr Jones showed his first data I was inclined to feel that the variation from my own figures probably came about because his figures were on hospital patients and my patients were in small homes, not hospitalized. However, when he told of the additional group of patients under private management, I was at a loss to explain the discrepancy between recurrences in his group and the recurrences noted in my experience. I have been interested in this problem for eleven years and during that period have watched about thirty-six children with rheumatic disease who migrated to Florida. There have been only four definite recurrences in Miami in this group of patients, and three deaths. With some exceptions this group were from poor families.

DR EDWARD F BLAND, Boston. I appreciate Dr Swift's calling attention to the lower mortality rate. Our mortality in a group of 1,000 children over a period of ten years is 24 per cent. Dr DeGraff called attention to the subacute bacterial endocarditis in a somewhat older group in which the incidence was roughly 6 per cent. In our younger group it was 6 per cent. So perhaps our impression that subacute bacterial endocarditis is relatively rare in the younger group is wrong.

DR T DUCKETT JONES, Boston. I should like to answer Dr Wilson's question. I think you will agree that in one family living in Florida there have been two instances of rheumatic fever. I do not know how to explain the difference between Dr Nichols' data and ours. Whether the fact that these patients went north has something to do with it, I cannot say. The statement that Dr Shapiro made bears out the observations in the convalescent homes. The question Dr DeGraff raised was whether I felt that the House of the Good Samaritan care was similar to that in Florida and Dr Swift's question as to whether I felt that the prognosis was altered are extremely difficult questions. I am not motivated by a desire to advertise any section of the country. The problem is that of rheumatic fever and the effect of climate on it. I would say that there is an annual variation in the control group in Boston and the group in Florida. Transportation to a subtropical climate may be logical from the point of view of study but not from active therapy. I do not believe that under the conditions of the experiment as carried out there is an extensive difference. I am not sure that the results would not be the same if the patients had remained in our section of the country. That is dodging the issue to some extent. I think that if I had a child of my own with rheumatic fever I would think a good deal before sending him away. I would not send him to a general hospital. I would send him to a small place where there would be good medical service. I do not think it is worth the economic stress to send children away. We know rheumatic fever occurs in sections of the world only two degrees from the actual tropics. It is discouraging. Further observations should be made on a group of patients living in this climate consistently and then compare the results with a more or less identical group in the subtropical regions.

(To be continued)

Current Medical Literature

AMERICAN

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American J Digest Dis & Nutrition, Fort Wayne, Ind

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The Liver as the Commissariat of the Body—Mann believes that he has collected sufficient evidence to indicate the importance of the liver in the mechanism of maintaining a constant supply of utilizable food for the organism. Hepatic activity must be considered as a possibility in every phase of metabolism. Present knowledge of the subject is only a small percentage of what must be learned before all the intricate processes involved are fully understood. The liver can be considered as a large storage and manufacturing plant, constantly teeming with activity. Through its vast sinusoids, which are in intimate relationship with the multitude of hepatic cellular units, are transported the various materials on which the tissues of the body must rely for their source of energy, growth and repair, and for the necessities for maintaining the processes of life. Some of these substances are susceptible of being used directly by the tissue cells, and the liver only stores them during periods of plethora. Other substances are more crude and the liver transforms them into a utilizable form. The vital stream to and from the liver must persist, during dearth of material, bodily disease and hepatic impairment. Surely the liver can rightfully be called the provider of the body.

Vitamin C Nutrition in Pulmonary Tuberculosis—Martin and Heise endeavored to determine the value of cevitamic acid in pulmonary tuberculosis by studying 150 tuberculous patients and fifteen normal nontuberculous individuals. The state of vitamin C nutrition was determined by collecting twenty-four hour samples of urine. All patients and controls were on the regular sanatorium diet. The test dose of cevitamic acid was given intravenously in some instances and orally in others, both normal and tuberculous individuals being tested. The extent and activity of the tuberculous process was simultaneously determined by x-ray and sputum examination, sedimentation rates and in some instances tuberculin skin tests. No adequately controlled evidence on the effect of cevitamic acid therapy on the course of pulmonary tuberculosis was obtained. The impression gained from the study is that it

does improve the prognosis, but no definite evidence for this impression was obtained. The study demonstrates the existence of a hypovitaminosis C in a large majority of tuberculous patients, the degree of hypovitaminosis is shown to parallel the extent and activity of the tuberculous process. The demonstration of the intestinal tract of the tuberculous patient as a factor in this subnutrition would indicate a loss in the specific absorptive powers of the normal intestine for cevitamic acid. The intestinal flora might play a part. The successful treatment of certain hemorrhagic diseases by cevitamic acid has led to the treatment of hemorrhage in tuberculosis with vitamin C. But attempts to stop hemorrhage in tuberculosis by the intravenous administration of cevitamic acid were not successful. Eight attempts gave no positive results. Judging from previous experience, the conclusion was reached that the period over which the pulmonary hemorrhage extended was in many cases shortened, however, a larger series would be necessary to establish this point. Involvement of the adrenals has long been suggested as a complicating factor in tuberculosis and it would seem that hypovitaminosis C plays an important part. Four cases of advanced pulmonary tuberculosis treated with adrenal cortex extract showed no response, but this does not rule out a possible effect, as cevitamic acid therapy was not instituted at the same time. Healing of the tuberculous process is a process of fibrosis. That vitamin C is required for the maintenance of all connective tissues is well known. Therefore the necessity of the maintenance of optimal vitamin C nutrition in tuberculosis is obvious. Cevitamic acid applications have been used successfully to stimulate the formation of granulation tissue and hasten healing of surgical wounds. It would seem that in any disease accompanied by fever there is an increased demand for vitamin C, in tuberculosis it is doubly essential to promote fibrosis.

American Journal of Surgery, New York

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Review of Ulcer Surgery at the Presbyterian Hospital 1921 to March 1935 Inclusive R C Page and L M Rankin Philadelphia—p 219
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Clinical Osteomyelitis of Long Bones R F Atsatt Santa Barbara Calif.—p 291
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Etiology of Appendicitis—Connell believes that distinction between appendicitis alone, and perforation and peritonitis, is important. Appendicitis is considered as a result of the sequence of obstruction, distention, circulatory stasis and infection. Obstruction may be due to a foreign body (mucous plug, edema or neoplasm), stricture (stasis, angulation and deformity) and functional derangement (spasm). The effect of the first two factors in obstruction is quite obvious, but that of the last calls for elucidation. The striking difference in the ileocecal region from all other gastro intestinal situations is that the parasympathetic distribution is double, which permits the possibility of overinnervation or underinnervation. Sympathetic-parasympathetic imbalance is a possible cause of hypertonicity or hypotonicity at the ceco appendical juncture. The existence of a true sphincter (Gerlach's valve) at this point has been denied, but circular muscle and extrinsic and intrinsic nerve supply, the necessary ingredients, are present. It would seem entirely justifiable to assume that disturbance in autonomic nervous balance might cause spasm or hypertonicity of the neuromusculature at the appendiceocecal juncture which might help to answer the original question as to the why of the obstruction that caused a certain proportion of cases of appendicitis. It would seem probable that overparasympathetic or underparasympathetic innervation of the ileocecal region is due to variations in embryologic development.

Annals of Internal Medicine, Lancaster, Pa

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- Myxedema Presentation of Group of Cases Illustrating Phases of Disease Which Are Receiving Attention in Recent Literature A Ravin, Denver—p 302
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- Lipid and Cholesterol Content of Blood of Patients with Angina Pectoris and Arteriosclerosis D Davis Beatrice Stern and G Lesnick Boston—p 354
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- Congenital Adhesions of Gallbladder L R Whitaker Boston—p 379
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Ketonic and Nonketonic Estrogens—Having worked out satisfactory methods for the quantitative separation of the ketonic from the nonketonic estrogen, Westerfeld and Doisy investigated the distribution of the two forms in ovaries and placenta and the transformations that occur after the administration of pure theelin or dihydrotheelin. Sow ovaries, from which the follicular liquor and corpora lutea had been removed, were extracted with boiling ethyl alcohol. Purification was effected by methods commonly used in their laboratory. On fractionation between ketonic and nonketonic estrogens it was found that a small but definite quantity of ketonic estrogen is present. This observation was confirmed by treatment with semicarbazid, which destroyed the estrogenic property of the ketone. By means of the same methods, the study of cows' ovaries gave no evidence of the existence of a ketonic form, thereby adding one more item to species differences observed in studies of the follicular hormone. The extract of ten human placentas was purified. On a per kilogram basis, the placenta contained about 800 rat units, of which approximately one fourth (200 rat units) was ketonic. Since theelin is the ketonic estrogen in human pregnancy urine, probably theelin occurs in the placenta. When dihydrotheelin is injected into a normal adult, a castrate or a castrate-hysterectomized monkey, from 30 to 45 per cent of the excreted estrogenic activity is ketonic. When theelin is injected into a normal adult, a castrate or a castrate-hysterectomized monkey, from 30 to 50 per cent of the excreted estrogenic activity is nonketonic. The evidence indicates that in the monkey the reaction between theelin and dihydrotheelin is reversible and that the ovaries and uterus are not essential for this transformation.

Excretion of Male Sex Hormones in Man—Koch's studies on normal men and women covered urine collections for from twenty-seven to forty-five consecutive days. The collections from men usually were pooled for three consecutive days. From the women two daily samples were received except during menstruation, when the excretions were pooled for the period. These urines were completely extracted, the androgenic and estrogenic active substances were separated from each other and assayed on capons and spayed rats respectively. In seven of the eight subjects the urine was hydrolyzed for two hours. In one male subject hydrolysis was limited to fifteen minutes, hence the greater yield of androgenic units in this individual. In both men and women marked daily fluctuations were observed in the urinary excretion of androgens and estrogens. The rates of excretion of the two activities bear no relation to each other. Only one of the normal men gave an indication of a cycle in the rate of excretion of androgenic substances. Although the daily variations for a given individual and for the group of four men are marked, the daily individual averages are remarkably constant, ranging from 63 to 68 international androgenic units. The averages for the estrogenic activity are also remarkably close, that is, from 9 to 12 micrograms of theelin daily. In the normal women the rate of excretion of androgens is also variable and of a high order, but distinctly lower than in men. The averages are

again relatively constant. The daily excretion of estrogen also varies considerably in normal women but tends to be higher than in men. There is good evidence of the periodic rise and fall in the excretion of estrogens in relation to menses. The excretion is lowest during menstruation. The daily averages range from 18 to 36 micrograms. In male castrates, exceedingly small amounts of sex hormones are found in the urine. In eunuchoids the excretions of sex hormones are distinctly lower than in normal individuals. In gynec mastia, no excess excretion of estrogens was observed. In virilism there is a tendency toward a lower excretion of estrogens with a normal or higher excretion of androgens. In cases of virilism with adrenal involvement, the excretion of androgens is exceedingly high.

Archives of Neurology and Psychiatry, Chicago

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- Anterolateral Chordotomy for Intractable Pain of Tabes Dorsalis. E A Kahn and B F Barney Ann Arbor, Mich—p 467
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- Word Associations as Affected by Deficient Oxygen Excess of Carbon Dioxide and Hyperpnea E Gellhorn and S H Kraines Chicago—p 491
- *Involuntary Melancholia Treatment with Theelin P G Schube M C McManamy C E Trapp and G F Houser Boston—p 505
- Effect of Roentgenotherapy on Gliomas I M Tarlov New York—p 513
- *Polio myelitis (Polio myelopathy) Chronica Report of Case, with Histologic Study A T Steegmann Cleveland—p 537
- Connections Between Striatum and Substantia Nigra in Human Brain R W Rundles and J W Papez Ithaca N Y—p 550
- Changes in Spinal Cord in Diabetes Mellitus Report of Case with Autopsy D E Griggs and C W Olsen Los Angeles—p 564
- Repression and Communicability in Catatonic Stupor B Cohen North Grafton Mass—p 572
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Involuntary Melancholia—A number of months before the publication of Werner's work, Schube and his colleagues had started an investigation of the value of theelin in the treatment of involuntary melancholia, and in view of the remarkable results obtained by Werner and his associates they report their results in four men and six women. In none of the ten patients that they treated with theelin was there evidence of improvement in the mental condition. The mental and physical condition of three patients became definitely worse during the treatment, one patient died. One of the patients continued to grow worse until the treatment was discontinued and then gradually reverted to his original mental state. In another patient regular monthly periods were established after six weeks of treatment with theelin. There was no alteration in the mental condition. No changes were noted in the hair, the texture of the skin, the breasts or the genitalia of any patient. There was no change in the appetite or the sleep rhythm of any patient. In two there was a definite loss of weight and in one of these there was marked retention of urine during treatment, necessitating catheterization, this man also had uncontrollable diarrhea. The blood pressure, the pulse rate and the pulse pressure, the blood and the urinary studies remained unchanged in every case. The sedimentation rate of the blood was not altered materially. The cholesterol content of the blood showed marked but unexplainable fluctuations.

Chronic Polio myelitis (Polio myelopathy)—A case of chronic polio myelitis in a patient who had had a previous attack of acute polio myelitis is reported. Histologic studies leads Steegmann to the following conclusions: 1 Chronic polio myelitis is a form of progressive spinal muscular atrophy. 2 A previous attack of acute polio myelitis may predispose to the development of this disease. 3 The term chronic polio myelitis is a misnomer, for the disease is a chronic progressive noninflammatory degenerative process. In the case reported, the spinal cord showed shrinkage of the anterior horns at all levels, with chronic degenerative changes and loss of cells. This process was associated with pronounced gliosis of the anterior horns extending into the white matter, increased fibrosis and gliosis around the blood vessels, fibrosis and thickening of the leptomeninges and diffuse myelopathy due to swelling of the myelinated fibers of the spinal cord. The

changes were not accompanied by mobile or fixed products of degeneration. Theories of the pathogenesis of chronic poliomyelitis are reviewed. The disease is considered to be a primary degenerative process of the anterior horn cells. Theoretically, this is due to metabolic factors, which can depend in part on the effect of the secondary tissue reactions in interfering with normal cell metabolism.

Arch of Physical Therapy, X-Ray, Radium, Chicago

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*Physiologic Availability of Fluids in Secondary Shock H A Davis Washington D C—p 461
*Extensive Burns Treatment with Silver Nitrate and Methyl Rosaniline H E Branch Detroit—p 478
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*Circulatory Disturbances Reflexly Inaugurated by Stimulation of Celiac Plexus Preliminary Report C L Burstein and E A Rovenstine, New York—p 599
Sixty Third Report of Progress in Orthopedic Surgery J G Kuhns, E F Cave S M Roberts, J S Barr R J Joplin Boston J A Freiberg Cincinnati J E Milgram, New York and R I Stirling Edinburgh Scotland—p 603

Physiologic Availability of Fluids in Secondary Shock

—Davis studied the nature and mechanism of the response of normal animals and of animals in shock to water and electrolytes. In view of the fact that the central phenomenon of shock is an anoxemia, it was decided that the rate of oxygen consumption of the animal provided a more accurate picture of the effects of traumatic shock on the tissues. Determinations of the blood pressure level were made to serve as controls. The study seems to indicate the presence of certain physiologic and pathologic limitations to the free and equal distribution of fluids in the organism in shock. The introduction of fluid into the intact animal produces a dilution of the blood with subsequent diuresis. In secondary shock the normal reservoir action of the blood for fluids is lost, and fluid leaves the blood stream more rapidly than in the intact animal. The site of fluid loss is greatest in the region of trauma, so that relatively little transudation of fluid occurs into the peritoneum or into the alveoli of the lungs. Evidences of water imbibition are present in the central portions of the hepatic lobules. The production of a lowered rate of oxygen consumption by the administration of fluids in cases of secondary shock does not result from interference with the supply of available oxygen by pulmonary edema. The stimulant action of water on metabolism is exerted only so long as fluid is actually present within the circulatory system and seems to depend on the resultant increase of blood volume or blood flow. Removal of serum albumin and globulin and of blood cells by the intro-

duced fluid into the area of trauma and the peritoneal cavity diminishes the material available for the transportation of oxygen and leads to a still greater degree of oxygen want.

Treatment of Extensive Burns with Silver Nitrate and Methyl Rosaniline—Branch maintains that the method of treating burns reported approaches closely the "ideal" treatment. 1 There have been no deaths in cases in which the treatment has been used thus far, and there were only seven deaths in ninety-five cases in which this form of therapy was used during its development. 2 The period of pain and shock was very short. Toxemia did not develop as a serious threat. 3 The morbidity was greatly reduced, for the patients were turned about in a few hours and were urged to get up and about in a few days and to wait on and amuse themselves. 4 Grafting of skin was done in only one case. Measures for the general upbuilding of the patient were also carried out. The combination used was silver nitrate and methyl rosaniline. A 10 per cent solution of silver nitrate acted on the proteins of the serum exuding from the burned area to lay down immediately a milky white coagulum. This then took the place of tannic acid in coagulating the proteins and preventing the loss of body fluids. The methyl rosaniline stained this coagulum violet and aided in destroying and preventing infection. At the end of three weeks the second degree burns had all healed and the crust had cracked off. The third degree areas were still covered by the violet coagulum, but this was easily removed by bathing daily in brine and by the use of compresses. On soaking off the crust there were invariably enough epithelial islands beneath so that no grafting was necessary. After the coat was off, compresses soaked in cysteine hydrochloride, 1:200 solution, or compresses or gauze treated with scarlet red were used to stimulate epithelization of the denuded areas. Thus the period of pain and shock was practically eliminated. The amount of parenterally administered fluids necessary was greatly reduced. The following procedure is carried out: 1 A large dose of sedative is given. 2 The burned areas are washed with tincture of soft soap. 3 Debridement of the burn is done by merely breaking the blisters and removing the loose skin, and the area is washed with saline or boric acid solution. 4 The burn is sprayed at once with a 1 per cent aqueous solution of methyl rosaniline, and after three or four minutes the entire burned area is swabbed with a 10 per cent solution of silver nitrate. 5 The patient is placed in a burn tent at a temperature of 85 to 90 F. The area is resprayed with a 1 per cent solution of methyl rosaniline every fifteen minutes for about five times. After that the spray is used once or twice a day only if necessary. 6 Fluids are forced by mouth. 7 Hypodermoclysis of physiologic solution of sodium chloride is given every six or eight hours, as indicated by the patient's condition. 8 Fluids are given intravenously only if the temperature rises to 103 F. 9 Transfusion is done if necessary. 10 The patient is moved about as soon as the crust is established and is allowed to walk about as soon as the period of shock is over and if no signs of toxemia develop. 11 If any coagulum remains at the end of two and one-half or three weeks, it should be soaked off with brine or by compresses.

Circulatory Disturbances Inaugurated by Stimulation of Celiac Plexus—Recently, in a case in which a difficult cholecystectomy was performed, at the stage when operative manipulation was at a maximum, Burstein and Rovenstine observed an unusual phenomenon in the course of routine sphygmomanometry by the auscultation method. The blood pressure, which had remained constantly within normal limits with a difference of 60 mm of mercury between the systolic and the diastolic level suddenly became imperceptible for twenty minutes, although the peripheral pulse could still be palpated and was not materially altered in rate. At first, the mercury column being allowed to fall very slowly, a single beat was heard at about the level of the previous systolic pressure. Within a few minutes this single beat could not be obtained. When the operative manipulations had ceased, the normal auscultatory sounds were again obtained and at a level comparable to the previous determinations. Thereafter careful and frequent determinations of the blood pressure were made during all operations on the upper part of the abdomen. The phenomenon was soon obtained in the course of another chole-

cystectomy and during gastric resection. The patients had been given morphine and atropine preoperatively. To account for the circulatory disturbance noted, observations were made in the laboratory to determine the effects on the blood pressure curve obtained during intra-abdominal manipulations. Dogs were used for the experiments and it was found that stimulation of the celiac plexus when atropine sulfate has been administered previously produces a marked reduction in the pulse pressure with maintenance of the mean arterial blood pressure. Manipulations in the upper part of the abdominal cavity cause a reduction in the pulse pressure, especially when atropine sulfate has been given previously. Administration of physostigmine salicylate reduces the reflex.

Arkansas Medical Society Journal, Fort Smith

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Johns Hopkins Hospital Bulletin, Baltimore

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*Sulfanilamide Rash F F Schwentker and S Gelman Baltimore—p 136
*Cyanosis from Sulfanilamide E K Marshall Jr and E M Walz, Baltimore—p 140

Sulfanilamide Rash—In administering sulfanilamide to 180 patients both orally and parenterally, Schwentker and Gelman observed ten in whom a rash developed. In some cases it was recognizable as early as the third day of medication with sulfanilamide, in half of the cases it appeared between the tenth and fourteenth days. The eruption is distinctly morbilliform in character, is made up of maculopapular lesions slightly raised from the surrounding unaffected skin and is brownish red. Although it does not fade completely when pressure is applied, the blanching of the rash is considerably more marked than that seen with a typical measles eruption. Usually almost the entire surface of the body is affected, but in some cases the rash has been limited to the buttocks or to the legs. In some of the patients the eruption was seen on the palms of the hands and the soles of the feet, while the mucous membranes were apparently unaffected. There was no itching or other abnormal sensation at the site of the lesion. With discontinuance of sulfanilamide therapy the eruption fades rapidly and may disappear completely in forty-eight hours. If administration of the drug is resumed, the rash sometimes reappears faintly or in scattered areas but never assumes its former brilliance, and even this slight recrudescence gradually fades away. If the sulfanilamide treatment is not discontinued at the time of the primary rash, the eruption fades and disappears completely in about seventy-two hours.

Cyanosis from Sulfanilamide—Cyanosis of varying degree has been observed in patients undergoing intensive treatment with sulfanilamide. This cyanosis has been attributed to the presence of methemoglobinemia or sulfhemoglobinemia. Marshall and Walz have examined the blood from seven patients treated with sulfanilamide in an attempt to determine how far the oxygen carrying capacity of the blood is reduced in patients showing cyanosis. The oxygen carrying capacity was compared with the total iron pigment of blood. The conclusions

drawn from the data are that clinical cyanosis may be accompanied by any decrease in the oxygen carrying capacity of the blood and may occur without the presence of nonfunctional iron pigment within the errors of the methods employed. In two cases the figures indicated nonfunctional iron pigment. This nonfunctional iron pigment appears to be mainly methemoglobin. The possibility of methemoglobin being present in small amounts in the blood samples from the other cases cannot be disproved by the data. An average of the figures for the five instances in which neither cyanosis nor a dark color of the blood was present makes it unlikely that more than traces of methemoglobin were present in these bloods. Methemoglobin as the cause of the cyanosis and dark color of the blood can be eliminated in these patients and also probably as the only cause in the other two cases. The authors cannot deny that sulfhemoglobin as well as methemoglobin may occur under certain conditions after administration of sulfanilamide, but it seems clear that these abnormal iron pigments supply by no means the only, and probably not the main, explanation of the cyanosis so frequently encountered in using the drug.

Journal of Biological Chemistry, Baltimore

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*Effect of Diet on Susceptibility of Canine Hematopoietic Function to Damage by Aminopyrine D K Miller and C P Rhoads New York—p 367
Composition of Specific Precipitates in Region of Antigen Exc S Malkiel and W C Boyd Boston—p 383

Diet and Susceptibility to Damage by Aminopyrine—In the case of acute stomatitis and granulopenia of the dog the etiology is apparent it is the feeding of a particular diet. In acute granulopenia of man the pathologic changes are in certain respects similar to those of the dog but the cause is obscure although the administration of aminopyrine appears to play some part. It seemed possible then that a faulty diet might well be one factor at least which increased the suscep-

tibility to the toxic effect of aminopyrine. To substantiate this hypothesis Miller and Rhoads performed experiments which should prove that a dose of aminopyrine which is ineffective alone will cause a well defined disturbance of hematopoiesis when it is added to a diet (blacktongue diet) which is not by itself causative of symptoms. Paradoxically, the resulting disturbance of the circulating blood cells manifested itself in the erythrocytes rather than in the leukocytes. Anemia was brought about in dogs fed the blacktongue diet by the administration of amounts of aminopyrine which were without effect when given to dogs fed a normal diet. When sufficient amounts of the drug were administered to dogs fed a normal diet, an anemia did result. It was not as severe as that caused by administering aminopyrine to animals on the inadequate diet and was not associated with stomatitis. Ulceration of the oral and pharyngeal mucous membrane was a striking feature when administration of aminopyrine was combined with the inadequate diet. That the anemia and stomatitis were not due to the diet alone is clear from the fact that they occurred before they could be expected if only the special diet was fed. Moreover, they were more severe than are the changes of blacktongue and were of a somewhat different character. The absence of leukopenia was remarkable, particularly since it would have been expected from the histologic appearance of the bone marrow. From this fact it would appear that the action of aminopyrine is neither exactly that of benzene nor of the blacktongue diet alone. The histologic alterations of the bone marrow appeared to be similar to those described in a case of benzene poisoning by Andersen and also to those seen in several cases of aplastic anemia in which no history of exposure to benzene was available. The suggestion is advanced that the factor in the diet which makes it productive of blacktongue is an aromatic compound or that the diet renders the body incapable of detoxifying some aromatic compound, either present in the diet or a product of intrinsic metabolic formation.

Journal-Lancet, Minneapolis

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Kentucky Medical Journal, Bowling Green

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Medical Annals of District of Columbia, Washington

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*Bone Marrow Findings in Diagnosis of Certain Blood Dyscrasias G L Weller Jr Washington—p 253

Incidence of Pinworm Infestation in Boys—Bozicevich examined 230 boys for pinworm infestation. He used a swab (N I H swab) made essentially of cellulose film (cellophane) that is applied by means of a glass rod and then removed from the rod and examined directly on a slide under the microscope.

Only one swab examination was made for each boy. There were seventy-two positive for pinworms. The percentage is undoubtedly too low. Repeated examinations regularly increase the percentage of positive observations. The high incidence (31.3 per cent) in this group points to a generally unrecognized public health problem in the form of pinworm infestation. The study indicates that there is a more prevalent infestation in the population of Washington than is generally believed to be the case.

Changes in Bone Marrow in Diagnosis of Blood Dyscrasias—The procedure that Weller used in the study of the changes in the bone marrow in cases of blood dyscrasias consists in the insertion of an 18 gage spinal needle with stylet in place cephalad into the sternum at the angle of Louis. With an infiltration of a 5 per cent solution of procaine hydrochloride the patient feels only a sense of pressure until the needle has penetrated the outer layer of cortical bone. After the cortical layer of bone has been penetrated, the stylet is removed and the needle is pushed forward a distance of from 5 to 10 mm, then it is removed slowly, and the material within the lumen is spread out in a thin film on a glass slide. Practically all the patients in the study had an anemia. The changes which have been observed in the cells of the bone marrow in cases of pernicious anemia coincide with those described by previous observers. Thus far no case of aleukemic leukemia has been observed. Several patients with relatively low leukocyte counts have been studied and it has been found that the bone marrow in these cases is practically identical, from the cytologic standpoint, with the bone marrow in pernicious anemia. Of the two cases of myeloid leukemia in which simultaneous studies of both peripheral blood and bone marrow have been carried out, it was found in one that the changes in cells in the circulating blood were relatively slight, while the biopsy specimens of the bone marrow showed marked abnormalities. Two cases have satisfied the criteria for aplastic anemia, that is, there was no response to any form of medication. In these cases the bone marrow specimens showed a certain number of stem cells present, the total number being far below that found in an untreated case of pernicious anemia with an erythrocyte count at a corresponding level. The greatest help to be obtained from biopsies of the sternal marrow is information concerning the direction which therapeutic management of the case should take. If there is a megaloblastic hyperplasia of the cells of the bone marrow, liver extract is indicated. If the stem cells are few in number, little response to therapeutic measures is to be expected. If the cells of the bone marrow are abnormal in kinds and numbers, even though those in the circulating blood are relatively normal, the case deserves diagnosis and management as one of the neoplastic diseases (leukemia).

Michigan State Medical Society Journal, Lansing

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New England Journal of Medicine, Boston

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New Jersey Medical Society Journal, Trenton

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- A Combination Arthrodesis and Subtrochanteric Osteotomy of the Hip with New Technic of Arthrodesis H Briggs Newark—p 490
- Further Observations on Operative Treatment of Retinal Detachment B F Baer Jr and J S Shipman Camden—p 494
- Roentgenologic Characteristics of Different Types of Pneumonia W G Cole New York—p 499
- Strabismus in Children J W White New York—p 501
- *Sulfanilamide Must Be Used with Care Case Report H A Tarbell Newark—p 506

Sulfanilamide Must Be Used with Care—Tarbell warns that when sulfanilamide is being used the patient must follow the physician's directions explicitly. The author has had a patient—treated for gonococcal infection—who disregarded his physician's instructions. He was instructed after the third day to reduce the tablets (0.3 Gm) to three in twenty-four hours for four or five days more, and he was not seen again until seven days had elapsed, when he was found in bed and very sick. His temperature was 104.2 F, pulse 120, respiration 30, he was trembling, cyanosed, coughing a great deal, had had fifteen bowel movements that day and could not retain food without vomiting. He gave a history of disregarding the physician's directions and had taken 0.65 Gm of sulfanilamide every six hours regularly for ten days. He had also taken a dose of magnesium sulfate. The author reports this case with the hope of stimulating some state board regulation in the sale of sulfanilamide and to discourage its indiscriminate sale by druggists.

New Orleans Medical and Surgical Journal

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- Who Owns the Radiograph? L J Williams Baton Rouge La—p 57
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- Metabolic Diseases of Nervous System E Wexberg, New Orleans—p 65
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- Present Day Conception of Agranulocytic Angina H J Schattenberg New Orleans—p 78
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- Diagnosis and Treatment of Acute Mastoiditis C L Cox New Orleans—p 90

Philippine Islands Med Association Journal, Manila

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- Staphylococcal Septicemia Case That Recovered A B M Sison Manila—p 387
- Low Cesarean Section A Baens Manila—p 393
- *Clinical Observations on Xerophthalmia C D Ayuyao Manila—p 399
- Extra Uterine Chorionepithelioma Report of Case E V de los Santos, Manila—p 403

Clinical Observations on Xerophthalmia—Ayuyao has observed a total of 393 cases of xerophthalmia, from both the outpatient and the inpatient clinic of the Philippine General Hospital. The ages ranged from the first year of life to the early school year (7 years). Both sexes were affected. All the patients were children of parents belonging to the laboring class. These 393 cases constitute hardly 1 per cent of all the eye cases admitted to the hospital nevertheless. Ubaldo and Ayuyao found that 2.23 per cent of the blindness among Filipinos was caused by xerophthalmia. No cases have so far been observed in well-to-do families. It may be accompanied by both gastro intestinal and respiratory diseases. The disease responds readily to treatment consisting of nutritious food and vitamin A.

Surgery, Gynecology and Obstetrics, Chicago

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- Carcinoma of Jejunum C W Mayo and W S Nettrout Rochester, Minn—p 303
- Effect of Thrombophlebitis on Venous Valve E A Edwards and J L Edwards Boston—p 310
- *Skin Hyperesthesia in Acute Salpingitis J S Labate New York—p 321
- *Enterectomy in Surgical Treatment of Hepatic Cirrhosis or Portal Obstruction with Ascites Muriel K. Fuller D D M Cook O W Walter and N Zbitnoff Chicago—p 331
- Relaxin in Human Serum as Test of Pregnancy D Abramson E Hurwitz and G Lesnick Boston—p 335
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- Thoracoplasty Within the Sanatorium P D Crimm D M Short C S Baker Evansville Ind—p 357
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- Spindle Cell Bladder Sarcoma E W White and R B Gaines Chicago—p 366
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- Method of Intestinal Anastomosis with a New Clamp H B Smith, Baltimore—p 383
- Two Stage Lobectomy in the Poor Risk Patient with Thyrotoxicosis V Davidson and L J Aries Chicago—p 385
- Pontocaine Spinal Anesthesia in Urology A L Stockwell and C K Smith, Kansas City Mo—p 389

Cutaneous Hyperesthesia in Acute Salpingitis—In summarizing the impressions that Labate gained during his study of fifty-three cases of acute salpingitis, examined frequently for cutaneous hyperesthesia, he contends that 1 Cutaneous hyperesthesia may be entirely absent in the most acute case of salpingitis with elevation of erythrocyte sedimentation rate leukocytosis, pelvic peritonitis and severe pain. The patient may persistently fail to develop hyperesthesia. Thus the presence of cutaneous sensitiveness cannot be used in gauging the severity of the infection. Also the absence of cutaneous hyperesthesia has absolutely no negative value. However, in all patients having the initial attack of acute salpingitis, cutaneous hyperesthesia was elicited consistently, with the maximal area at either the spino-umbilical point or Ligats point. 2 Cutaneous hyperesthesia may be of fleeting and recurring character. It is difficult to explain this characteristic. It seems to bear no relation to increase or decrease in the severity of the infection. 3 The persistent type of hyperesthesia which is present on admission and remains throughout the acute phase of the disease is also encountered. Many times the maximal area of sensitiveness shifts. In this type, as the patient improves, the hyperalgesia will tend to disappear, only to recur again with an exacerbation of the disease. The total duration of cutaneous hyperesthesia in these patients varied between several to twenty-six days. 4 The maximal area of cutaneous hyperesthesia bears no relation to the maximal area of deep tenderness except in some cases. Therefore one must not predict the area of maximal hyperalgesia according to the location of maximal deep tenderness. 5 The total area of cutaneous hyperesthesia is variable rarely severe and determined only with the exercise of diligence. 6 A maximal area of cutaneous sensitiveness can always be determined.

Enterectomy in Hepatic Cirrhosis or Portal Obstruction with Ascites—Fuller and her associates cite a case of portal cirrhosis with ascites of a duration of more than twenty months treated by tapping, with no tendency toward diminution. After massive intestinal resection (enterectomy) the rate of ascitic accumulation was immediately approximately halved, and following a period of a gradual decrease of the ascitic fluid its formation ceased nine months after the operation. The patient has now been free from ascitic fluid for twenty-nine months. After operation the patient was permitted to follow his appetite as to any type and amount of food and liquid desired. His output of urine has averaged 1,300 cc daily. Though the patient has not suffered from constipation he has had no tendency to diarrhea, which is sometimes noted following massive enterectomy.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

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Postoperative Blood Lipids—Boyd studied the concentration of total lipid, neutral fat, total, ester and free cholesterol and phospholipid in the blood plasma and the erythrocytes in the blood of twenty-nine patients submitted to abdominal and extra-abdominal operations and complete abortion. The determinations were made before and from one to five times after operation. It was observed that ether anesthesia is the predominant factor responsible for changes in the concentration of plasma and erythrocytic lipids during the first day or so after operations. When operative procedures are accompanied by variations in body temperature, the latter may affect the concentration of blood lipids independently of the operations. The introduction of a toxic factor may also affect the values of the blood lipids apart from any concomitant surgical intervention. The removal of all or part of a structure, such as a fetus, thyroid or the placenta or presumably the prostate, may sufficiently alter lipid metabolism to affect the values of the blood lipids. Postoperative pulmonary edema is not a common condition, but when it occurs it may have a pronounced effect on the concentration of plasma lipids. In this condition the sudden concentration of plasma by removal of large amounts of fluid into the lungs and other structures produces a secondary polycythemia and an increase in the concentration of lipids in plasma. Postoperative cases in which no contributing factor can be established are usually found to have no significant alteration in the percentage of blood lipids, either those of the plasma or of the erythrocytes. This has been found in the present investigation to hold true for major as well as for minor operations, either inside or outside the abdomen. There

seems, therefore, no further justification for the use of the term "postoperative lipemia" or for the postulate that such a condition may exist and be due to surgical intervention itself.

Incidence of Pulmonary Embolism—Pilcher endeavored to determine whether pulmonary embolism has a seasonal or epidemic incidence. A request was sent out to the registrar general for the dates of death in all cases of fatal pulmonary embolism verified by postmortem during the years 1929 to 1934. The reply gave details of no more than thirty-five cases. It was then decided to attempt the collection of cases from the London teaching hospitals. Permission to make use of their postmortem records was granted by twelve hospitals. The material for analysis comprises 731 cases of fatal pulmonary embolism occurring in the years 1925 to 1934. During this period 911,215 patients were admitted and there were 46,562 deaths and 36,145 postmortem examinations. Having regard to the excess of deaths over postmortem examinations and the assumed incidence of undiagnosed or unconfirmed cases, the author concludes that every year at least 100 patients die of pulmonary embolism at the twelve hospitals studied. The records of these cases suggests that survival for many years might have been expected in more than half but for this accident. The distribution of the 731 cases over the 3,652 days of the decade was first studied and compared with the normal distribution found by calculating the Poisson series. No evidence has been found to support the impression that pulmonary embolism has any seasonal or epidemic incidence. In 573 cases there was a history of trauma, in 158 there was none. The predominance of traumatic cases is partly due to the high proportion of patients requiring surgical intervention that are admitted to the hospitals. A rough approximation shows an incidence of 0.105 per cent in surgical cases and 0.064 per cent in medical cases. It is suggested that a more important factor in etiology than the nature of the illness or trauma is immobilization of the patient. In traumatic cases the interval between trauma and death varies from one day to many weeks. The supposed primary thrombosis was found in the veins of the right leg more commonly than of the left in traumatic cases. There appears to be an association between right-sided injuries or operations and thrombosis in the veins of the right leg. This has not been observed, however, in cases of postoperative thrombosis not followed by fatal embolism. The age incidence reaches a maximum in the five years 55 to 59, both for traumatic and for nontraumatic cases.

British Medical Journal, London

2 253 306 (Aug 7) 1937

- Obstructions of Common Bile Duct E R Flint—p 253
Nutritional Needs in Pregnancy R McCarrison—p 256
Nutrition in Pregnancy Louise McIlroy—p 258
Dietary Requirements in Pregnancy and Lactation G C M M'Gonigle—p 259
Artificial Pneumothorax Treatment with Especial Reference to Bilateral Collapse J Crockett—p 261
Treatment of Laryngeal Diphtheria A G Robb—p 264

Guy's Hospital Reports, London

87 273 390 (July) 1937

- *Psychogenic Factor in Asthma II Asthma in Adults E B Strauss—p 273
Obsessional Psychoneurosis in a Boy of Twelve Use of Phys Technic R A Q Lay—p 287
*Tuberculous Mediastinal Lymphadenitis in Childhood Secondary Effects on Lungs R C Brock R J Cann and J R Dickinson—p 295
Carcinoma of the Trachea Commentary on Case I G Robin and W N Mann—p 318
Melanosis Coli with Description of Two Cases in which It Disappeared While Under Observation A Hurst—p 332
Two Cases of Aplastic Anemia One with Secondary Hemochromatosis Following 290 Transfusions in Nine Years the Other with Secondary Carcinoma of Stomach R M Mark—p 343
Dental Condition in Cleidocranial Dysostosis M A Rushton—p 354
Studies in Clinical Endocrinology II Habitual Abortion Its Incidence and Treatment with Progesterone or Vitamin E P M F Bishop—p 362
Epidemiology of Streptococcal Infections W H Bradley—p 372

Psychogenic Factor in Asthma—Strauss examined thirty unselected cases of asthma with a view to determining the absence or presence of 'nervous,' psychic or emotional factors in the asthmatic syndrome. Of the thirty cases the "nervous" element was found to be strongly present in sixteen cases, well represented in nine cases, feebly but definitely represented in four cases and undetected in only one case. 1 In its psychic

aspects, asthma may in certain cases be complex determined, 1 e, included in the group of the conversion hysterias 2 A person with the allergic diathesis, who is temperamentally a deviant from the conventional norm of his immediate social group, is likely to develop the asthmatic syndrome 3 An asthmatic subject is liable to make his asthma the center of his life, 1 e, to develop and cultivate an asthmatic personality. Such a person by the mechanism of what Kretschmer calls arbitrary reflex reinforcement can "turn on" his asthma on all possible occasions whenever it suits his unconscious or pre-conscious purposes 4 Allergic subjects who live under conditions of extreme emotional strain and stress are liable to exhibit the asthmatic syndrome 5 Asthma in an allergic subject may be part and parcel of a general state of anxiety, the affect, when the anxiety tension is very high, finding an autonomic reflex outlet. If these conclusions are justifiable, they suggest that psychotherapy, in the widest sense of the term, should reinforce physical methods of treatment, the form of psychotherapy being determined by the history of the case. Analytic psychotherapy would appear to be indicated in groups 1 and 5. Patients who fall into group 2 should benefit by a personality analysis, as opposed to an experiential analysis (vide Kretschmer) and taught how to accept and adapt themselves to their own temperamental patterns. In the case of group 4, it will sometimes prove possible by means of active intervention to modify the patient's environmental conditions. Patients who fall into group 3 should respond well to suggestive methods with or without hypnosis.

Lymphadenitis in Childhood—Brock and his colleagues support the view already put forward by several authors that in other instances of tuberculous mediastinal lymphadenitis the pulmonary changes are not due to some peculiar pneumonic reaction but can be explained entirely on the basis of atelectasis following bronchial obstruction due to the pressure of enlarged bronchial glands. They cite eight instances from which it is clear that gross secondary changes can occur in the lungs of children as a result of bronchial occlusion from tuberculous adenitis. In some cases there is no doubt that a fatal acute tuberculous bronchopneumonia may follow aspiration of caseous material into other parts of the bronchial tree if and when rupture occurs, in others there may be some peculiar pneumonic change, as seen by Cameron and De Navasquez in their case. On the other hand it is a surprising fact that no apparent harm may follow aspiration of the caseous material, as is shown by one of the authors' patients. Indeed, it seems possible that such an event may be followed by natural resolution and healing. If caseous material is discovered at bronchoscopy, it seems justifiable to remove it by gentle suction. When resolution is long delayed, it is reasonable to suppose that the prolonged bronchial stenosis with secondary atelectasis should be followed by the development of a total or unilateral bronchiectasis with a varying amount of secondary chronic pneumonia. No proved cases observed in childhood have been followed into adolescence or adult life and the development of a true bronchiectasis has not been demonstrated clinically and roentgenographically. On the contrary, it is not uncommon to see large calcified mediastinal glands with no sign of concomitant bronchiectasis. Such a gland must almost certainly be the cause of gross bronchial obstruction at one stage. It is however probable that actual infiltration and destruction of the bronchial wall is necessary before permanent secondary changes occur. Attempts should be made to follow into adult life cases of gross tuberculous mediastinal lymphadenitis in children so that more definite information can be obtained, for only in this way is it going to be possible to decide whether permanent bronchiectatic changes do commonly follow.

Journal of State Medicine, London

15 4 5 96 (Aug.) 1937

- Rheumatism and Allied Diseases R S Woods—p 432
 Outstanding Problems in Human Nutrition S J Conell—p 440
 Mineral Requirements in Human Nutrition E M Widdowson—p 449
 Infant Feeding in Warm Climates R J Blackham—p 462
 Toxemia of Pregnancy Its Significance and Treatment Margaret M Jaden—p 474
 Early Diagnosis of Cancer with Especial Reference to the Preventive Aspect E Hirden—p 484

Lancet, London

2 301 360 (Aug 7) 1937

- Arterial Pulse in Health and Disease II The Pulse Wave C Brantwell—p 301
 *Transfusion of Stored Cadaver Blood W N Shamov—p 306
 *Prolongation of Action of Pituitary Antidiuretic Substance and of Histamine by Metallic Salts E C Dodds R L Noble H Richter Knecht and P C Williams—p 309
 Varicella Gangrenosa Due to *Streptococcus Pyogenes* H S Danks and J E McCartney—p 311
 Fatal Pneumothorax Due to Rupture of Solitary Bulla of Lung J Gough—p 314
 Spontaneous Pneumothorax Associated with Bulloous Emphysema A Wilcox and A F Foster Carter—p 315
 Experiences with Concentrated Whole Liver Extract S J Hartfall—p 317

Transfusion of Stored Cadaver Blood—Shamov has used cadaver blood in forty-two cases. By the quantity and quality of the reactions after transfusion he found that transfusion of cadaver blood gave better results than the usual method. Reactions after transfusing cadaver blood are much rarer and are much less conspicuous. There were six reactions in very seriously ill patients in the forty-two cases, principally with diseases of the hematopoietic system. In no preceding series in his experience—a thousand transfusions in which citrated blood as well as the direct method was used—has the author observed so few reactions. The dead body can be exonerated from the suspicion of disease with much greater certainty. The supply is cheap, and with an efficient organization it is possible to have a stock of this blood in any quantity necessary for clinical needs. These advantages can be made use of in practice only with widespread and efficient organization for procuring the cadaver blood, and this is possible only in large centers. There is a strong prejudice in the majority of persons at the thought of transfusing cadaver blood into a living person. Such an attitude is a survival of primitive views about blood as the bearer of particular mystic properties. After a certain period man will overcome these prejudices as easily as the numerous others that have arisen during the history of the development of blood transfusion.

Prolongation of Action of Solution of Posterior Pituitary—During an investigation of factors influencing gastric secretion, Dodds and his co-workers found solution of posterior pituitary to have an inhibiting effect on glandular secretion. As this action is transitory, experiments have been conducted with various metallic salts in an attempt to prolong the inhibition. Groups of four 200 Gm male rats, fasted for twelve hours, were given 5 cc of water per hundred grams of body weight and simultaneously injected with the substance on trial. The urine excreted was collected and measured at regular intervals. Zinc salts caused a marked prolongation of activity, while cadmium and nickel have a similar and more powerful action. The action of histamine in stimulating gastric secretion also was prolonged by the presence of zinc.

Medical Journal of Australia, Sydney

2 161 196 (July 31) 1937

- One Hundred Years Medical History in South Australia A F Stokes—p 161
 Bronchopulmonary Segments Radiologic Pathologic and Bronchoscopy Considerations with Especial Reference to Subapical Bronchopulmonary Segment J H Neil W Gilmour and F J Gwynne—p 165
 Note on Lange Test and on Preparation of Colloidal Gold J Sutherland—p 172
 Lange Colloidal Gold Reaction as Routine Test Preliminary Note on Results A R Buchanan—p 175
 *Protein in Cerebrospinal Fluid Clinical Significance and Quantitative Determination G Phillips—p 179
 Gastro-Intestinal Symptoms of Hypoglycemia C Sippe—p 181

Protein in Cerebrospinal Fluid—In tabes and meningo-vascular syphilis the normal protein content of cerebrospinal fluid from 20 to 40 mg per hundred cubic centimeters is increased to from 30 to 80 mg, and at the same time there is a disproportionate increase in the globulin fraction. Phillips states that the protein content is increased in all meningeal infections, in septic meningitis and in tuberculous meningitis the protein may range from 50 to 150 or more mg per hundred cubic centimeters. In disseminated sclerosis also there is usually a slight increase in protein content. In cerebral abscess an increase in protein will be found in practically every case even when the abscess is deeply situated. The explanation of this

is probably the fact that an adequate centrifugal circulation is provided by the Virchow-Robin spaces to enable the discharge of protein from edematous areas of cerebral tissue surrounding the abscess. Even after apparently adequate surgical drainage of a cerebral abscess a guarded prognosis should be given while the protein remains at a level above that of high normal. Most intracranial neoplasms, particularly if they arise from the arachnoid and more particularly if they are situated in the posterior fossa will cause an increase in cerebrospinal fluid protein. All posterior fossa neoplasms except cholesteatoma, cause an increase in protein content, whether they are intracerebellar or extracerebellar in origin. This is due to the relatively smaller size of the cerebellum and its intimate contact with the fluid not only in the convexities but also in the fourth ventricle. Above the tentorium, protein increase is most likely to be caused by meningiomas or by any other cerebral growths which have arisen at or have grown into contact with the surface of the hemispheres or the ventricular ependyma. In growths in contact with the ventricles, the great bulk of protein is added to the cerebrospinal fluid after it passes out of the ventricular system into the subarachnoid spaces. Estimation of the protein in specimens of fluid taken from both lateral ventricles may be of localizing significance, since tumors in contact with one ventricle may produce an increased protein content in the fluid in that ventricle with little or no increase in the contralateral ventricle. In the third ventricle the well known colloid cyst does not cause any increase in protein, this knowledge may be of value in the differentiation of this condition from tumors in the same ventricle, particularly spongioblastoma.

South African Medical Journal, Cape Town

11 455 488 (July 10) 1937

- Food Poisoning Caused by Materials of Animal Origin E M Robinson —p 455
Food Poisoning Caused by Substances Other Than Those Produced by Bacterial Infections D G Steyn —p 463
The Vitamins: Survey of Existing Knowledge H N Dale —p 467
*Effect of Cooking on Antiscorbutic Value of Vegetables L F Levy —p 474
Baboon Electrocardiogram R W S Cheetham —p 477
Normal Respiratory Movements in Natal Summer F G Cawston —p 478
Note on Two Beetles of Medical Interest in Natal B de Meillon —p 479
Agglutinins for Dysentery Organisms in Natives of Southern Rhodesia W Alves K E Berry and Dorothy O E Beadle —p 480
History of Medicine II Medical Establishments and Institutions at the Cape During Opening Years of Nineteenth Century P W Laidler —p 481

11 489 524 (July 24) 1937

- Sterility and Falling Birth Rate J L Gray —p 491
Id The Public Health Aspect C C P Anning —p 493
Excision of Thoracic Esophagus A Radford —p 498
Roseola Infantum Rose Rash of Infants M Witkin —p 499

Cooking and Antiscorbutic Value of Vegetables—Levy has applied the chemical method (titrating with indophenol) for estimating cevitamic acid in cooked vegetables. Specimens of the usual kinds of vegetables were taken from a large hospital and a mine native compound to find out to what extent the antiscorbutic activity is impaired by the culinary methods employed. The chemical procedure confirms the biologic method that the effect of cooking on vegetables is to bring about a loss in antiscorbutic value. The extent of the loss depends on various factors. 1 In all cases, with the single exception of unpeeled potatoes, a portion of the cevitamic acid is extracted by the boiling water, the larger the volume used, the greater the diffusion of the cevitamic acid. Much of this activity, however, is still available to the consumer, if the vegetable is boiled in the stew or soup for a short time. 2 Since the cevitamic acid is slowly extracted during boiling the longer the heating the greater is the loss. This effect is more apparent with cabbage than with potatoes presumably on account of the fact that the cells of leaf vegetables are more easily ruptured than in the case of tubers. 3 When vegetables are allowed to stand for a long time after boiling the cevitamic acid becomes oxidized fairly rapidly, presumably by atmospheric oxidation. This loss is over and above that experienced during the actual cooking. 4 When the vegetables were cooked in tinned or aluminum utensils the loss in activity did not increase. The amount and kind of metallic substances in the vegetables,

however, are important factors in destruction of their cevitamic acid content, since metals catalyze irreversible oxidation. The quantity of metal that is dissolved from the utensil during boiling would be exceedingly small compared with the amount actually present in the vegetable. 5 Solutions of cevitamic acid are rapidly destroyed by alkali even in the cold, and the biologic test shows that the addition of alkalis to boiling vegetables leads to rapid destruction of the antiscorbutic activity.

Archives Med-Chr de l'App Respiratoire, Paris

12 169 256 (No 3) 1937

- Pulmonary Abscess H Durand —p 169
Endopleural Pressure and Pulmonary Circulation F Parodi —p 186
*Roentgenologic Aspects of Interlobar Fissures in Patients with Cardiac Decompensation: Their Frequency and Significance. Inflammation of Fissures in Patients with Cardiac Disorders C Roubier —p 200
Radiographic Aspects Simulating Tuberculosis in Patient with Cardiorespiratory Azotemia P Pruvost Delore and Grenet —p 211
Sympathetic System and Pulmonary Tuberculosis G Rosenthal —p 215
Laryngeal Tuberculosis Stenoses Paradoxical Forms Biologic Treatment of Perforation of Epiglottis Several Cases G Derscheid and P Toussaint —p 234

Roentgenologic Aspects of Interlobar Fissures—In making roentgenologic studies on patients with cardiac disorders, Roubier noted the great variety of roentgenograms of the pulmonary fissures of the patients with cardiac decompensation. He found that in patients with cardiac disorders inflammation of the pulmonary fissures exists almost exclusively on the right side. On the left side they are extremely rare. Moreover, inflammation is most frequent in the small fissure (horizontal fissure), whereas the large (oblique) fissure is rarely involved. When the oblique fissure is visible in the film, the horizontal fissure is visible also. In this connection the author points out that the roentgenograms were made from the front, in order to study the whole thorax and not to obtain information about fissural lesions. Consequently it is the horizontal fissure which is best visible in this position and its lesions are less likely to escape detection. The author discusses the pathogenesis and the significance of the inflammations of the pulmonary fissures in patients with cardiac disorders and reaches the conclusion that the fissural inflammations, which are so frequent in the advanced stage of cardiopathy are a roentgenologic manifestation of the propagation to the pleura of inflammatory lesions of the lung that has become involved in heart disease.

Journal de Medecine de Lyon

18 471 488 (Sept 5) 1937

- *Sudden Death Without Apparent Cause in Pulmonary Tuberculosis Bonnamour Duplant and Ambre —p 471
*Diverticulum of Greater Curvature of Stomach with Signs of Subcardial Stenosis M Levrat and R Cade —p 481

Sudden Death in Pulmonary Tuberculosis—Bonnamour and his associates state that sudden death without apparent cause is occasionally observed in patients with pulmonary tuberculosis. They observed thirteen cases of sudden death among 3200 patients and among 920 fatalities. The causes are variable: there are lesions of the adrenals, tuberculous meningitis or acute tuberculous asphyxia. However the authors place especial emphasis on hepatic and renal lesions, which they observed in several cases. These lesions suggested sudden allergic reactions that were elicited either by a massive bacillary discharge or by soluble poisons and endotoxins of the tubercle bacilli.

Diverticulum of Stomach with Signs of Subcardial Stenosis—Levrat and Cade point out that diverticula of the greater curvature of the stomach were described first by Akerslund in 1923 and that the number of cases reported since has remained small. In the roentgenologic examination, these diverticula appear as small pockets on the posterior surface of the large curvature, visible only in the oblique position or after partial evacuation of the barium and only refilling at times in the recumbent position. The diverticula are frequently discovered by accident in the course of a roentgenologic examination, because, as regards the clinical aspects, they are often latent. In some cases, however, there are late irregular pains. In the case described by the authors, the diverticulum produced signs

of stenosis below the cardia, which disappeared under the x-ray screen in the positions that assured the evacuation of the diverticular pocket. The existence of these diverticula is explained by a throw-back to an embryonic condition. The treatment consists in the regular mechanical evacuation of the diverticular pocket and in measures against the inflammatory and spasmodic phenomena.

Schweizerische medizinische Wochenschrift, Basel

67 773 808 (Aug. 21) 1937 Partial Index

- Differential Diagnosis of Loss of Pupil Reflexes E. Burki — p. 774
Is Surgery Indicated in Person with Unilateral Gray Cataract? W. Comberg — p. 779
Importance of Ocular Symptomatology in Pathogenesis of Myasthenia (Erb-Goldflam Disease) A. Franceschetti — p. 780
Intestinal Tuberculosis and Disorders of the Fundus Oculi A. Franceschetti and R. Herrmann — p. 784
Detachment of Retina as Result of Inflammations in Adjoining Tissues W. Meisner — p. 788
Diagnostic Significance of Determination of Blood Pressure in Retinal Vessels F. Rintelen — p. 791
*Proteus Conjunctivitis and Contribution to Parinaud's Syndrome A. Zuccoli — p. 803

Proteus Conjunctivitis—Zuccoli reports the history of a woman, aged 53, who developed an acute swelling of the lids of the right eye. The anamnesis revealed that the patient had had for some time a secreting perianal fistula. The swelling of the lids was so severe that the right eye could not be opened. Moreover, the right cheek was swollen and the movement of the lower jaw was difficult. The disorder was diagnosed as Parinaud's conjunctivitis, although there was no destructive ulceration and necrosis of the conjunctiva. It is known that Parinaud's syndrome does not have a uniform etiology. Bacteriologic studies on the diseased conjunctiva disclosed *Bacillus proteus-vulgaris*. The conjunctivitis disappeared rapidly in response to nonspecific treatment, with moist compresses and instillation of a silver preparation. In order to demonstrate the pathogenicity of the proteus bacillus for the eye, animal experiments were made and it was found that mere instillation of proteus bacilli into the conjunctival sac may produce a suppurating conjunctivitis. By the subconjunctival injection of the bacillus a granulomatous conjunctivitis could be produced. Inoculation into the cornea, the anterior chamber and the vitreous body demonstrated a great pathogenicity of *Bacillus proteus* for the eyes of rabbits.

Pediatrics, Naples

45 765 856 (Sept. 1) 1937

- *Blood Transfusion in Bronchopneumonia in Infants G. Murano — p. 765
Behavior of Diastases in Blood of Infants Preliminary Note A. Chieffi — p. 783
Permeability of Blood Encephalic Barrier in Infantile Dystrophy E. Tatafore — p. 788
Type of Diphtheria Bacillus in Relation to Clinical Evolution of Diphtheria N. Carrara and A. Previtera — p. 796
Hemiplegia with Postdiphtheritic Paralysis Case Nora Andreis — p. 812
Ancylostomiasis in Children Clinical and Epidemiologic Study F. Martellotti — p. 820

Blood Transfusion in Bronchopneumonia in Infants—Murano obtained satisfactory results from blood transfusion in eighteen of a group of twenty-six infants suffering from bronchopneumonia. The identity of the blood groups between patients and donors was previously established in all cases. The transfusions were made slowly in the vein of the elbow, and 15 or 20 cc of 10 per cent citrated blood was used for each transfusion. Besides transfusion the symptomatic treatment for bronchopneumonia was administered. In some cases satisfactory results were obtained with the first transfusion. In other cases two or three transfusions were given, one every other day. An intense reaction which is similar to that from a colloidoclastic shock follows the first transfusion in patients who follow an evolution to recovery. The reaction is less severe after the second and third transfusions and is poor in patients who are gravely ill. The reaction lasts for about two hours. It differs from that of shock from incompatibility of blood groups. Blood transfusion gives the best results in early uncomplicated forms of bronchopneumonia and also in toxic and infectious forms if it is given early in the development of

the disease. The results depend on the general condition of the patient when given the first transfusion. Blood transfusion stimulates the organic defenses and modifies the colloidal equilibrium of blood and tissues, it supplies the blood with proteins, ferments, vitamins and immunifacient substances.

Policlinico, Rome

44 425 472 (Sept. 1) 1937 Medical Section

- *Intestinal Trichomoniasis with Symptoms of Mucomembranous Enterocolitis P. De Muro — p. 425
Endocarditis from Nocardia Cases L. Alestra and M. Girolami — p. 441
Behavior of Blood Serum Proteins Following Repeated Bleeding B. Rubegni — p. 464

Intestinal Trichomoniasis with Mucomembranous Enterocolitis—According to De Muro, a review of the literature on clinical anatomopathologic and experimental studies shows that *Trichomonas hominis* has pathogenic properties similar to those of *Endamoeba histolytica*. It phagocytizes the erythrocytes and is the etiologic agent of certain diseases of several organs. Trichomoniasis with symptoms of mucomembranous enterocolitis is frequent. It may be of a simple febrile or emaciating clinical form. The author found twelve cases of the condition in adults in a span of about three years. In all cases there was the symptomatic triad of constipation, abdominal pain and elimination of mucous membranes. Constipation was moderate and sometimes there was pseudodiarhea. *Trichomonas* was identified from the feces or from fecal cultures. The microscopic study of the small pieces of the eliminated mucous membrane showed degeneration of the epithelial cells and presence of a few leukocytes and *Trichomonas*. The patients complained of pain at the iliac fossa and the transverse colon. Generally the patient had a humid tongue and an unpleasant breath. In three cases there was tumefaction of the abdomen. Five patients had a hypertrophic liver. There was hypochlorhydria in eight cases and hyperchlorhydria in one. In three cases chlorhydria was normal. In four there was eosinophilia. The author advises the examination of the feces for ten consecutive days because of the fact that the period in which the examination of the feces for the parasite may give negative results lasts for more than a week. The patients observed by the author were given a diet with pre-dominance of milk and greens without excessive dietetic restrictions. In all cases satisfactory results were attained from the administration of chiniofon or enterovioform by mouth. Detailed technic and dosage of the treatment are not given by the author.

Jahrbuch für Kinderheilkunde, Berlin

149 201 264 (July) 1937

- Dominance and Degrees of Stimulation of Center of Sucking A. Peiper — p. 201
Auricular Flutter After Diphtheria A. Beer — p. 207
*Clinical Aspects of Tuberculous Meningitis L. Schlapobersky — p. 215
Peculiar Case of Cleidocranial Dysostosis in Child Aged 7 Hildegard Winkler — p. 238

Clinical Aspects of Tuberculous Meningitis—Schlapobersky reports observations in sixty cases of tuberculous meningitis that came for observation at the university clinic in Bern and also cites reports from the literature. He found that tuberculous meningitis does not present a uniform clinical picture but may appear in many different forms. On the basis of the symptomatology he differentiates seven different forms: the classic type, the gastro-intestinal type, the narcoleptic type, the convulsive type (convulsions, chiefly of the tonicoclonic type), the hemiplegic type, the latent type and the type in which the consciousness is not impaired. Occasionally there are combinations of the different types. The temperature varies in different cases of tuberculous meningitis. The tuberculin test is usually positive (79 per cent of the author's cases). The changes in the cerebrospinal fluid vary. Increased pressure is a frequent change. Tubercle bacilli were discovered in 31.7 per cent of the author's cases. Other changes occurring with considerable frequency were positive Pandy and Nonne-Apptel tests, reduction in the sugar content and increase in the number of cells. The sedimentation speed was nearly always reduced. In 54 per cent of the cases it was possible to demonstrate the source of infection.

Klinische Wochenschrift, Berlin**10** 1169 1200 (Aug 21) 1937 Partial Index

- Causal Agent of Venereal Lymphogranuloma K Herzberg and L O Kohlmueller —p 1173
*Investigations on Elimination of Vitamin A in Human Feces H Wendt —p 1175
Experimental Requirements of Treatment of Diphtheria by Means of Vitamin C and Adrenal Cortex Extract E Berger —p 1177
Result of Desensitization in Diabetic Patient with Insulin Allergy G Stotter —p 1180
Relation of Ultraviolet Irradiation of Surgical Field to Anaphylaxis and Nonspecific Therapy H Havlicek and A Jonusch —p 1183
Determination of Acetone Bodies in Clinic F Lauersen —p 1187

Elimination of Vitamin A in Human Feces —Wendt describes studies on the quantitative determination of vitamin A in the feces of healthy subjects with and without vitamin A tolerance tests and in the feces of patients with various disturbances in the processes of resorption. The feces that have been eliminated in twenty-four hours are rubbed up with anhydrous sodium sulfate and dried, then introduced several times into 96 per cent alcohol and left to stand over night. Passage through the suction filter is followed by boiling for thirty minutes with 25 per cent alcoholic solution of potassium hydroxide to effect saponification. After cooling the material is shaken several times with benzene. The benzene extracts are washed several times with distilled water until the reaction toward litmus is no longer alkaline. Then the benzene extract is dried for about twelve hours with sodium sulfate, filtered and condensed in a vacuum until dry, then combined with chloroform and again condensed. After that 10 cc of chloroform is added and to 0.2 cc of this mixture 1 cc of solution of antimony trichloride is added. The resulting blue coloration is subjected at once to colorimetry. Under the influence of the daily administration of three times twenty drops of a vitamin A preparation, the blue value of the feces increased at first only slightly, but between the twelfth and thirtieth day of the tolerance test it suddenly increased to several hundred or several thousand units. This seems to indicate that before an excess of vitamin A is eliminated in the feces the vitamin depots of the organism are filled and that the organism has a regulatory mechanism which prevents an excessive increase in the vitamin A content. In patients with considerable disturbances in the resorption (icterus, peritoneal carcinosis), the tolerance test with three times daily twenty drops of vitamin A preparation resulted at once in a severe blue reaction in the stools. The eliminated amount of vitamin A corresponded to the degree of impairment in the resorption.

Medizinische Welt, Berlin**11** 1093 1128 (Aug 7) 1937 Partial Index

- Drinking Cures with Sea Water History Method and Indications H Bruning —p 1093
*Treatment of Severe Genital Hemorrhages in Essential Thrombopenia A Hildebrandt —p 1103
Circulatory Action of Scilla Glucosides During Semihy A Bergel —p 1105
Hay Fever Patients H Flach —p 1107

Treatment of Hemorrhages in Essential Thrombopenia —Hildebrandt stresses the necessity of an examination of the blood in young girls with severe genital hemorrhages, for the hemorrhages may be caused by Werlhof's disease or by essential thrombopenia. After discussing the clinical aspects of thrombopenia the author evaluates the various therapeutic methods that have been recommended for it, pointing out that in recent years the research on vitamins has provided new therapeutic possibilities for the hemorrhagic diatheses. A preparation that contains vitamins A, B, C and D in combination with calcium phosphate has been used in essential thrombopenia successfully by some and without success by others. Still more recently the use of vitamin C has been recommended for the treatment of the hemorrhagic diathesis and several authors have produced favorable effects with vitamin C in essential thrombopenia with severe genital hemorrhages. He himself reports two such cases. The first patient, a girl, aged 18, had essential thrombopenia and genital hemorrhages. After various other methods, such as curettage, treatment with insulin, endocrine therapy and medicaments for the contraction of the uterus, had produced only temporary improvement, treatment with vitamin C and iron produced lasting results. The second patient was a woman aged 26. In this case also the genital hemorrhages as well as the petechial and mucosal bleedings responded to

treatment with vitamin C and iron. In the conclusion the author suggests that the favorable effect of vitamin C on hemorrhages and on the hemorrhagic diathesis is probably due to the fact that it reduces the vascular permeability.

Munchener medizinische Wochenschrift, Munich**84** 1281 1320 (Aug 13) 1937 Partial Index

- Indications for Surgical Treatment of Goiter C Schindler —p 1281
*Indications for Surgical or Nonsurgical Treatment of Thyrotoxicoses from Point of View of Internist H Kammerer —p 1285
Cutaneous Lesions Caused by Yellow Cross Gas (Dichlorethylsulfide Mustard Gas) Diagnosis First Aid and Further Treatment L Hauck —p 1292
Bone Lesions Caused by Overexertion in the Work Service M Detlef sen —p 1294

Surgical Treatment of Thyrotoxicoses —Kammerer stresses that in all severe cases of exophthalmic goiter, which develop rapidly, the postponement of the operation involves danger. If the internal treatment produces no essential improvement in the thyrotoxic symptoms, the preoperative iodine treatment according to Plummer should be instituted. Strict bed rest, quieting psychotherapy and, if necessary, sedatives are the first measures in the internal treatment of severe exophthalmic goiter. Animal proteins should be restricted, but carbohydrates should be given in relatively large amounts. If the metabolic rate increases in spite of this treatment, medication with iodine might be continued for a while after the operation. The thyrotoxicoses that develop during the menopause are often favorably influenced by irradiation of the hypophysis. In cases of exophthalmic goiter which are caused by iodine, irradiation is contraindicated. In mild cases of exophthalmic goiter, surgical intervention is unnecessary, for they either recover spontaneously or in response to internal measures.

Zeitschrift fur Krebsforschung, Berlin**46** 109 240 (July 21) 1937 Partial Index

- Experiments with Estrogenic Substance Production of Intra Uterine and Extra Uterine Neoplasms in Rabbits Hannah Pierson —p 109
*Influence of Photosensitizing Substances on Development of Cutaneous Tumors W Bungeler —p 130
Incidence of Cancer First Complete Cancer Statistics of Germany in Last Thirty Years W Stupening —p 175
Nature of Cytolytic Reaction Particularly in Model Experiments A von Waecl and O Pesta —p 211
Cancer Statistics in Rostock W Fischer —p 221
Fibro Epithelial Tumor a Papilloma, from Which Sarcoma Developed O Berner —p 232

Photosensitizing Substances and Cutaneous Tumors —Bungeler says that the occurrence of cutaneous carcinomas chiefly in the region of the face has given rise to the assumption that intensive exposure to sunlight is somehow concerned in the causation. However, since the same exposure to the rays of the sun produces cancers only in some persons, it was assumed that there are still other factors. In this connection the author points out that Kosanovics, in examining the urine of fourteen patients with facial carcinoma, regularly detected hematoporphyrin, which is not found in the urine of normal persons or of those in whom the carcinoma is in a different location. It has been assumed that the presence of hematoporphyrin in the urine is the manifestation of a constitutional anomaly on the basis of which the exposure to sunlight exerts its harmful effect. After reviewing the literature on this problem, the author describes his own experiments on the effect of photosensitizing substances on the development of cutaneous tumors. He produced photosensitization with eosin, hematoporphyrin and a fluid tar preparation. The experimental animals, white mice, were exposed to the sunlight for five or six hours each day. In a large number of animals it was demonstrated that the subcutaneous administration of the photosensitizing substances sensitizes the skin in such a manner that exposure to intense sunlight first produces inflammatory changes, which later are followed by atrophic and hypertrophic processes of the cutaneous epithelium and connective tissue and that these changes in turn lead to the formation of benign or malignant tumors. In control animals that were exposed only to sunlight but were not treated with photosensitizing substances there occasionally developed benign cutaneous neoplasms but never malignant neoplasms. Moreover, the percentage of animals developing tumors was much smaller in the control group than in the group that had been sensitized. Thus it cannot be denied that photosensitizing substances play a part in the development of cutaneous tumors.

Wiener klinische Wochenschrift, Vienna

50 1195 1218 (Aug 20) 1937

- Diagnosis and Statistics During Senility A Muller Deham—p 1195
Question of Ability to Make a Will in Patients with Mental Defects H Urban—p 1200
*Prevention of Puerperal Mastitis by Dry Treatment H von Brucke—p 1203
Therapy of Migraine A Schick—p 1205
Simple Method for Correction of Outstanding Ears E Eitner—p 1206
Treatment of Serious Bone Fractures R Demel—p 1206

Prevention of Puerperal Mastitis—Von Brucke maintains that keeping the nipple dry is of primary importance in the prevention of mastitis. In view of the drying effect of tannic acid, he decided to treat the nipples with a powder containing tannic acid and formaldehyde. This powder is non-toxic and its application to open wounds is painless, at the most producing a mild burning sensation. After nursing, the nipple is carefully cleaned with a damp cloth and dried. Then the tannic acid powder is dusted on. The tanning and hardening effect of the tannic acid preparation prevents the penetration of pathogenic micro-organisms to the deeper tissues and promotes the healing of existing rhagades under dry crusts. Great care is taken that during the intervals between nursing the breast is kept dry. If the nursing is unable to empty the breast, the pump is used and an absorptive cloth is applied to the breast. The nurslings never showed aversion against the breast that had been treated with the tannic acid preparation. In 1,200 women in whom the breasts were treated in this manner only one case of mastitis developed, and this was in a woman who had an extensive furunculosis.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

51 4033 4136 (Aug 21) 1937 Partial Index

- Hypertension and Eye Disease H J M Weve—p 4036
Protamine Insulin L Meyler and A de Maar—p 4045
Connection Between Intake and Elimination of Vitamin B₁ in Healthy Persons H G K Westendorp and J Goudsmit—p 4056
*Results of Irradiation in Cancer of Os Uteri D den Hoed—p 4063

Results of Irradiation in Cancer of Os Uteri—Den Hoed concludes that the present technic of irradiation produces cure in from 50 to 60 per cent of the operable cases and of the cases that are on the borderline of operability and in about 20 per cent of the inoperable cases. Further improvement of the results may be expected chiefly from an earlier onset of the treatment, that is, during a more favorable stage of the cancer. This implies that an early diagnosis is important. It is suggested that early diagnosis will be promoted by the regular examination of the apparently healthy. Moreover, the great technical improvements obtained during recent years in the field of radiology suggest that the number of cures can be increased also by further refinements of the therapeutic methods.

Hospitaltidende, Copenhagen

50 817 848 (July 13) 1937

- *Treatment of Pellagra with Stomach Preparations and Gastrogenic Etiology of Disorder Together with Relationship to Polyneuritis Among Other Disturbances A Petri O Wanscher Else Stubbe Teglbjærg and H P Stubbe Teglbjærg—p 817
Some Neurologic Problems in Pellagra Illuminated by Treatment with Ventriculin H P Stubbe Teglbjærg—p 841

Treatment of Pellagra with Stomach Preparations—Petri and his associates conclude that disturbances in gastric function of local or central origin are of decisive etiologic significance in pellagra. They found that removal of the stomach in young dogs and swine induced a chronic, fatal disease regarded as pellagra, with universal morphologic changes in the nervous system and corresponding clinical manifestations. Since these changes were resistant to oral treatment with vitamin B, but rapid improvement followed administration of neutralized stomach juice, the symptoms seem attributable to the loss of a probably specific gastric function. In some patients, whose pellagra and alcoholic polyneuritis were supposed due to a deficient stomach function, treatment with human stomach juice or pressed juice from swine stomach as the sole treatment led to marked improvement or clinical recovery. The authors state that six cases of pellagra which originated during depressive psychoses in spite of sufficient diet were cured by treatment with ventriculin; the treatment had no certain effect on the psychoses. In cases with achylia it is important to add

twenty drops of hydrochloric acid three times a day to the fluid in which the ventriculin is given. The manifest pellagra symptoms will usually disappear in two months at the most. Because of the similarity in the changes in the nervous system in pellagra and in pernicious anemia and because of the affinity of both disorders by ventriculin, the authors would identify neuropoietin (or perhaps the product formed by its cooperation) as the probable antipellagra factor. The favorable effect of therapy with stomach preparations in cases of polyneuritis associated with disorders in gastric function (Petri and Wanscher) is believed to point to the loss of a specific stomach function in these cases, like that lacking in pellagra.

Ugeskrift for Læger, Copenhagen

99 825 842 (Aug 5) 1937

- *Pneumonia Studies II Serum Treatment of Croupous Pneumonia N I Nissen—p 825
Pneumococcus Serum T Madsen—p 834
Pernicious Anemia Resistant to Oral Treatment Case G F Johansen—p 834
Chronic Potassium Iodide Intoxication Christine Thygesen and Cecil Nielsen—p 835

Serum Treatment of Croupous Pneumonia—Nissen states that the mortality in seventy-four cases of croupous pneumonia treated in 1934 and 1935 was 41.9 per cent. During the following eighteen months 100 patients were treated, ten, or 16.9 per cent, of the fifty-nine given serum treatment died; twenty-three, or 56.9 per cent, of the forty-one who received no serum died. He considers it justifiable to treat every patient presenting croupous pneumonia with type I serum immediately on admission and until type determination is made, when treatment with type-specific serum should be continued.

99 843 862 (Aug 12) 1937

- Ranke's Teaching on Tuberculosis Review O Thomsen—p 843
*Diagnosis of Myelomatosis K Transbøl—p 847
Dysuria and Ephedrine with Remarks on Treatment of Nocturnal Enuresis and Myelitic Enuresis L E Ørskild—p 851
Early Operation of Chorionepithelioma After Hydatid Mole Case B Viking—p 853

Myelomatosis—Transbøl says that hyperproteinemia accompanies myelomatosis. The most commonly employed test that can disclose it is the sedimentation reaction. While the globulin reactions are valuable aids in diagnosis, sternal puncture is important for earlier and more certain recognition of the disorder. In the case described, in which no clinical symptoms except cachexia and anemia were present, no elimination of Bence Jones protein and no roentgenologic changes, myelomatosis was suspected because of the exceedingly high sedimentation reaction (140 mm) in connection with but slightly elevated temperature, and the diagnosis was established through sternal puncture. Examination of the serum proteins showed a total protein of 9.45 per cent (2.92 per cent albumin, 6.53 per cent globulin). While cases of myelomatosis with normal serum proteins and greatly accelerated sedimentation reaction are reported, failure of the sedimentation reaction must, on the whole, be expected in myelomatosis with normal serum proteins. In cases in which the hyperproteinemia seems inexplicably high, closer examination of the serum by one of the more specific reactions is indicated, the formol-gel reaction is the simplest of these. Bing adds two drops of formaldehyde to 1 cc of serum and notes whether at room temperature a gelatin ring forms within three hours, in most of his cases this occurred during the first half hour, in two cases not until after two hours and in the author's instance not until after two hours and forty minutes. The test is positive only in more marked hyperproteinemia, which appears preeminently in myelomatosis but is also seen in Bing and Neel's disease, Boeck's sarcoid, grave liver disturbances and occasionally chronic infections. Takata's reaction may be positive. Jersild diagnosed six cases by means of "auto checking" of the Wassermann reaction. The author considers x-ray examination an uncertain method in myelomatosis and examination for Bence Jones protein of diagnostic value. In many cases of myelomatosis there is renal injury demonstrable by functional tests and determination of the blood urea. In some cases uremia is the direct cause of death. The possibility of myelomatosis should be borne in mind in atypical cases of renal insufficiency and myelomatosis was established in six out of the twelve cases of anemia of uncertain genesis found by Spiller among 432 cases of anemia.

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COMMUNITY PROVISION FOR THE SERUM TREATMENT OF PNEU- MOCOCCIC PNEUMONIAS

REPORT OF THE COMMITTEE ON PUBLIC HEALTH
RELATIONS OF THE NEW YORK ACADEMY
OF MEDICINE BY A SPECIAL
SUBCOMMITTEE

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I THE PROBLEM OF THE PNEUMONIAS

It is well known that in our part of the world "pneumonia" is not only a very prevalent but a very deadly disease. The combined average lethal rate of the pneumonias is close to 25 per cent. As a cause of invalidism and death, the pneumonias outrank the communicable diseases of childhood. They occupy third place in the mortality bills of New York City, New York State and the United States death registration area and are preceded only by the diseases of the heart and by cancer. They take a very large toll among people of the most productive age groups. There are few prevalent acute conditions which have such a high mortality or are as expensive to treat.

Within the last decade the curative value of concentrated specific immune horse serum has been established for the pneumococcic pneumonias of type I and type II, and evidence is rapidly accumulating that it is also efficacious in types V, VII, VIII and XIV. The general introduction of specific serum therapy has been slow. The possible reasons for it are:

- 1 The lingering of the dictum that the disease is self limited
- 2 Hesitation on the part of general practitioners to employ serum intravenously
- 3 The difficulty in obtaining serums, and their high cost
- 4 Lack of facilities for the differentiation of pneumococci
- 5 Failure on the part of health authorities, except in New York, Massachusetts and several other communities, to recognize the communicable character of the pneumonias and to urge appropriations for the free distribution of the antipneumococcus serums

The Bureau of Laboratories of the New York City Health Department, the Rockefeller Institute and several of New York's hospitals, notably Bellevue and Harlem, have made very important contributions to the development of specific therapy for pneumonia.

II A BRIEF HISTORICAL RETROSPECT

It has been established that the etiologic factor of lobar pneumonia in man is the pneumococcus although

other micro-organisms are sometimes identified with true cases of lobar pneumonia. Table 1 gives the bacterial flora in lobar pneumonia on the basis of 2,000 cases.¹

It is impossible within the short space of this section to give a detailed history of the evolution of therapy with pneumonia serum. Only the highlights will be touched on.

To Weichselbaum is conceded the credit for having definitely established in 1886 the causal relation of the pneumococcus to lobar pneumonia. The discovery by Neufeld of the solubility of pneumococci in bile led to the method of differentiation between the pneumococcus and the streptococcus. Pioneering work in the utilization of immune serum in pneumonia was done by the Klemperers in 1892, followed by Eyre and Washbourn, and by Elser and Roper at the New York Hospital in 1909 and 1913.

In 1909 Neufeld and Haendel first demonstrated the existence of antigenically different types of pneumococci. They also noted that the protective action of the antipneumococcus serum in mice was limited to the homologous strain of pneumococcus. In the two papers that they published in 1910 they discussed the need of type determination for effective serum therapy. They gave an account of the results obtained by them in treatment of patients with intravenous injections of potent antipneumococcus horse serum. They called attention to the need of administering large doses to obtain beneficial results.²

In this country it was under the auspices of the Medical Commission for the Investigation of Acute Respiratory Diseases of the Department of Health of the City of New York that the earliest work on the pneumococcus began. This commission was organized at the suggestion of Hermann M. Biggs in 1904, and a special grant of \$10,000 for the work was made by the Board of Estimate and Apportionment. E. G. Janeway was the president, William Osler, vice president and T. Mitchell Prudden secretary, the other members being William H. Welch, L. Emmett Holt, Frank Billings, John H. Musser, Theobald Smith and Francis P. Kinnicutt. The cooperation of a number of outstanding bacteriologists and pathologists was secured under the leadership of Biggs, William H. Park and Anna Williams. Reports were first published in the *Journal of Experimental Medicine and Biology* in 1905 and in the *Journal of Infectious Diseases* in 1906 and 1907.

In part I of the report of the commission, published in 1905, there appeared a paper by Katherine R. Collins

1 Cecil R. L., Baldwin H. S. and Larsen N. P. Lobar Pneumonia. *Arch. Int. Med.* 40: 253 (Sept.) 1927.

2 Roper J. C. Serum Treatment of Pneumonia. *M. Rec.* 86: 187 and 224, 1914.

3 Neufeld and Haendel. Weitere Untersuchungen über Pneumokokken-Heilsera. *Arch. d. Gsundheitsw.* Berlin 34: 293-304, 1910.

of the Bureau of Laboratories of the City Department of Health in which the following conclusions were presented

1 Pneumococci, by reason of their agglutinating properties, exhibit a tendency to separate into numerous groups similar to streptococci

2 *Pneumococcus mucosus* forms a distinct and consistent variety. The production by it of common agglutinins for some pneumococci and the resistance of the agglutinins produced by it to absorption by the streptococcus indicate a nearer relation to the former than to the latter organism

Further contributions to the biology of the pneumococci were made by Dochez and Gillespie of the Rockefeller Institute in 1913 and by Dochez and Avery in 1915. Their studies showed that there were at least three distinct and fixed types of pneumococci, designated respectively as type I, type II and type III, which comprised about 80 per cent of all the strains of pneumococci encountered in patients with lobar pneumonia. The pneumococci which were found in the other patients were for the most part unrelated to one another and were designated as group IV.

This work led to extensive clinical studies with unconcentrated antipneumococcus type I serum at the Rockefeller Institute by Cole and Dochez (1913) and later by Avery, Chickering, Cole and Dochez (1917).

TABLE 1—*Bacterial Flora in Two Thousand Cases of Lobar Pneumonia*

	Cases	Per Cent
<i>Pneumococcus</i>	1 913	95.65
<i>Streptococcus haemolyticus</i>	76	3.8
<i>Pneumobacillus of Friedländer</i>	8	0.4
<i>Haemophilus influenzae</i>	1	0.05
<i>Staphylococcus aureus</i>	2	0.1

In 1920 Cecil and Blake showed that monkeys inoculated with a fatal dose of pneumococcus type I could be protected with specific type I horse serum.

As a result of the influenza pandemic of 1917 and 1918 the Metropolitan Life Insurance Company appointed a commission known as the Influenza and Pneumonia Commission of the Metropolitan Life Insurance Company. This commission held its first meeting July 15, 1919. It consisted of Milton J. Rosenau, chairman, William H. Park, G. W. McCoy, W. H. Frost, E. O. Jordan, Lee K. Frankel and Augustus S. Knight, medical director of the Metropolitan Life Insurance Company. The commission is still in existence, with the same chairman but with a changed membership. During the year 1920 the work of the commission was limited to epidemiologic and immunologic studies of influenza. In the following year a series of studies on the prophylactic use of influenza vaccines was made and experiments were carried on in New York and Massachusetts with pneumonia vaccines. At that time it was found that the extracts of the pneumococcus had no better prophylactic virtues than the vaccines usually made.

The refinements in the production of the pneumococcus immune serum were due to a number of workers. New York City was the pioneer in this field, the first really practical method for concentrating a specific immune serum, namely, diphtheria antitoxin, having been devised in the Bureau of Laboratories of the Department of Health by Robert B. Gibson in 1905. Subsequently, various modifications and improvements were made by Banzhaf, also in the Bureau of Laboratories of the Department of Health.

In 1915 Gay and Chickering were the first to show that the immune bodies in pneumococcus serum could be separated by biologic methods. Further fundamental work along these lines was done by Huntoon. Though Huntoon's antibody solution possessed definite therapeutic value, it frequently caused severe and some times fatal reactions. It was used in the treatment of several hundred patients at Bellevue Hospital.

In 1924, working under Rosenau at Harvard University, Felton developed a concentrated antibody solution by precipitating the euglobulins with large quantities of distilled water. The production of Felton's serum was aided by a grant of \$10,000 for three years which was placed at the disposal of Dr. Park by Mr. Lucius N. Littauer, who, by subsequent grants, is said to have given the sum of \$120,000 toward the study of pneumonia. The value of Felton's serum was conclusively demonstrated at Bellevue Hospital by Cecil and Sutcliffe and by Cecil and Plummer and at Harlem Hospital by Bullock and Rosenbluth. At this time, with the aid of another grant by Mr. Littauer, the first effective anti-pneumococcus type II serum was produced at Otisville and refined by Felton. Its clinical value was demonstrated when it was used on the first, second or third day. Its efficacy in cases presenting bacteremia was proved by Baldwin at the New York Hospital.

In 1926 Georgia Cooper and her co-workers at the Bureau of Laboratories of the Department of Health began the publication of a series of studies on the different strains of pneumococci, which had been previously classified as group IV, and succeeded in resolving them into twenty-nine types, they obtained pure cultures and antisera for each type. In the words of Rosenau, "This is considered one of the outstanding pieces of work of the Metropolitan Influenza and Pneumonia Commission." As a result of these studies the species of pneumococcus is now divisible into thirty-two types, each designated by Roman numerals.⁴ Some of these types are more prevalent in adults, others in children.

In 1928, with the aid of funds given to New York University through Dr. Park, and in 1930, through funds given to Dr. Charles Hendee Smith by the Commonwealth Fund, and as the result of a study of pneumonias in children at Harlem Hospital through funds given Dr. Bullock by the Littauer Fund, types I, VI, XIV and XIX were recognized as the most common invaders of children. Further work in this field was financed by the Altman Foundation for the production and testing of serum for additional types that were associated with pneumonia in children.

In 1929 reports of the value of concentrated serum for the newer types began to be published. The clinical evaluation of the newly segregated types V, VII and VIII was largely the work of the Harlem Hospital workers, under the Littauer grant. This work was subsequently confirmed by the Boston City Hospital group.

At that time an appeal was presented to the Commonwealth Fund by the Massachusetts Department of Public Health for a pneumonia study and service. The clinicians who experimented with the use of the serum in Boston were unanimous in believing that the serum should be distributed, the product made more potent, the cost lowered and reliable data obtained on the dosage required if the benefits to be derived from the antipneumococcus serum were to be enjoyed by all.

4 Some of the types are so closely related that the question has arisen whether they should be continued as separate entities. This applies particularly to type XXXI which is being classified with type XI and to type XXX which is now being classified with type XI.

those who stood in need of it. The Commonwealth Fund made the first grant in 1930, with the expectation that the demonstration would continue for five years. An advisory committee, under the chairmanship of Dr. George H. Bigelow, then commissioner of health of the state of Massachusetts, was organized, and Dr. Roderick Heffron became the executive who carried on the field work. The demonstration had a twofold objective: "the evaluation of pneumonia serum under the conditions of the general practice of medicine, and the development of plans for the distribution of this serum for the treatment of those patients who might reasonably be expected to benefit from its use."⁵ It thus embraced problems of scientific research as well as of administrative procedure.

It is now recognized that the most effective use of serum depends on the administration of the required amount in the shortest possible time. This is practicable only when the serum is of high titer. Felton's concentrated horse serum permits larger doses to be administered in smaller bulk and more effectively, it simplifies the procedure and reduces the incidence of primary reactions and of serum sickness.

Experiments are now being conducted by Goodner, Horsfall and McLeod at the Rockefeller Institute with unconcentrated but processed rabbit serum, and at Harlem Hospital under the direction of Bullowa with concentrated rabbit serum. Their limited experience to date indicates that rabbit immune serums have definite biologic advantages over horse immune serums.

III DEVELOPMENT OF THE RAPID METHOD OF PNEUMOCOCCUS TYPE DETERMINATION

In view of the importance of early recognition of the type of pneumococcal infection for successful therapy, the development of the technic of rapid type determination from the sputum is an important milestone in the evolution of the specific treatment of pneumonias. The pioneer work in this field was done by Krumwiede and Noble of the Bureau of Laboratories of the New York City Department of Health, who in 1918 worked out a method whereby they were able to differentiate the types from the sputum within a comparatively short period of time, its reliability was not established. Later Sabin devised the stained slide agglutination technic which saved time and material. The original methods of typing required considerable quantities of mouse peritoneal exudate for the agglutination tests.

Although Neufeld had described in 1902 the specific capsule swelling reaction, occurring when the pneumococci are acted on by the homologous immune serum, he appears not to have recognized its applicability to typing until nearly thirty years later. In 1931, in a study with Etlinger-Tulczynska,⁶ he described the reaction again and in a footnote stated that it was a convenient method for determining types of pneumococci. Credit for introducing the Neufeld swelling reaction for direct typing of sputum in Great Britain goes to Armstrong⁷ of St. Bartholomew's Hospital, and to Logan and Smeall⁸ of the Royal Infirmary of Edinburgh, who reported it simultaneously in the *British Medical Journal* of Jan. 30, 1932. It was introduced in this country in 1932 by Goodner at the Hospital of the Rockefeller Institute and was first described

here by Sabin⁹ early in 1933, after a test of it in 100 cases at Bellevue Hospital. In 1934 Beckler and MacLeod¹⁰ reported on the use of the method at the Bacteriological Laboratory of the Massachusetts Department of Public Health in 760 specimens of sputum over a period of sixteen months. At a meeting of the American Public Health Association in Pasadena, Calif., Sept. 3, 1934, Cooper and Walter¹¹ reported on the reliability of the Neufeld reaction as ascertained in the tests made at the Bureau of Laboratories of the Department of Health in New York City. Bullowa established the accuracy of the Neufeld method by direct cultures from the lung and blood.

IV PNEUMONIA PREVALENCE IN NEW YORK CITY

Although pneumonia has been a reportable disease in New York City for many years, the health department figures fall by a considerable margin to reflect the true number of cases of pneumonia in the city. An approximation of the divergence can be obtained by a comparison of the 16,972 reported cases of pneumonia in the year 1933, with the 20,163 patients with pneumonia known to have been discharged from the hospitals in that year. This discrepancy becomes even wider when it is realized that not all the hospitals in the city were included in the study, nor were institutions other than hospitals. The prevalence of the pneumonias can therefore be only approximated from the mortality rate. The total number of deaths from pneumonia has been decreasing annually since 1931, except for a slight upswing in 1936. During the last six years the number of deaths from pneumonia in New York City varied between 6,400 and 9,200. The average for the last three years has been 6,500 deaths. Assuming a case fatality rate of 25 per cent, the average number of cases of pneumonia during the last few years has been 26,000 per annum. There are no statistics to indicate how many of these pneumonias were of pneumococcus origin, but, assuming that 95 per cent of the lobar pneumonias and 75 per cent of the bronchopneumonias were of this etiology, the total pneumococcal infections numbered 22,000. When the very young and the very old are eliminated, it is safe to say that about 10,000 patients would be benefited by specific serum therapy. This figure should be borne in mind when plans are laid for the supply of antipneumococcus serum for New York City.

V TYPE INCIDENCE IN PNEUMOCOCCIC PNEUMONIAS

Many epidemiologic studies have been made of the types of pneumococcus found in patients ill with pneumonia. Considerable variations in the percentage distribution of the prevalent types have been observed. The latest study available is that of Bullowa and Wilcox,¹² which analyzes the distribution of the pneumococcus types and their variations in incidence and mortality for adults and children on the basis of 3,371 cases treated at Harlem Hospital from July 1, 1928, to June 30, 1936. This study shows that among adults there are considerable variations in the several types of pneumonia from year to year, that type I is consistently the most prevalent, followed by types III and VIII, although in the year 1934-1935 type V was next in prevalence to type I, and in 1935-1936 type VII took

⁵ The Commonwealth. Final Report of the Massachusetts Pneumonia Study and Service, 1931-1935, p. 4.

⁶ Neufeld, E. and Etlinger-Tulczynska, R. *Ztschr. f. Hyg. u. Infektionskr.* 112: 492, 1931.

⁷ Armstrong, R. R. *Brit. M. J.* 1: 187 (Jan. 30) 1932.

⁸ Logan, W. R. and Smeall, J. T. *Brit. M. J.* 1: 188 (Jan. 30) 1932.

⁹ Sabin, A. B. Immediate Pneumococcus Typing Directly from Sputum by Neufeld Reaction. *J. A. M. A.* 100: 1584 (May 20) 1933.

¹⁰ Beckler, Edith and MacLeod, Patricia. *J. Clin. Investigation* 13: 901 (Nov.) 1934.

¹¹ Cooper, Georgia and Walter, Annabel. *Am. J. Pub. Health* 25: 469 (April) 1935.

¹² Bullowa, J. G. M. and Wilcox, Claire. *Endemic Pneumonia Arch. Int. Med.* 59: 354 (March) 1937.

that place. The conclusion drawn from this study is that the endemic pneumonias are a series of diseases which vary in occurrence from year to year and from month to month and that further studies of this character are needed to determine whether the specific types of pneumonia have individual cycles. The study also shows that there is a marked difference in the types of pneumonia found in children and in adults living in the same community.

The variation in the prevalence of the pneumococcus types from year to year makes it difficult for the health laboratories always to have adequate amounts of the different immune serums available to meet changing conditions.

VI ORGANIZATION OF PNEUMONIA CONTROL IN MASSACHUSETTS AND NEW YORK STATE

The modern practical application of the antipneumococcus serum had its birth in New York City. As far back as 1911 the Research Laboratory of the Department of Health began the production and limited distribution of a polyvalent antipneumococcus serum made from strains prevalent at that time.

Four years later the Division of Laboratories and Research of the New York State Department of Health prepared type I specific antipneumococcus serum for general distribution, and in 1917 sputum typing was added to the list of procedures required for qualification of approved public health laboratories rendering such service.¹³

In 1917 the Massachusetts Department of Health likewise undertook the production and distribution of pneumonia serum. The difficulties associated with the administration of unconcentrated serum and the frequency of severe serum reactions were responsible for the slow adoption of this mode of therapy. The intensive five year pneumonia study and demonstration carried on in Massachusetts from 1931 to the end of 1935, with the financial aid of the Commonwealth Fund, paved the way for an effective plan of administrative organization.

In the fall of 1935 the New York State Department of Health undertook to organize a comprehensive pneumonia control program embracing not only the production and distribution of concentrated antipneumococcus serum and the expansion of available laboratory facilities but also active participation in graduate professional information, in lay education, in the expansion of public health nursing service to pneumonia patients, and in research on the epidemiology of pneumonia and the evolution of more adequate means for its control. This program was undertaken with the close cooperation of the state medical society and the New York State Association of Public Health Laboratories, with financial aid from the Metropolitan Life Insurance Company and the Commonwealth Fund.

In Massachusetts the serum for type I and type II pneumonia is being produced for general distribution through a system of so-called laboratory supply stations. There are seventy-two such stations scattered throughout the state. Thus far only concentrated serum type I and type II are available to all physicians in the state. No charge is made for serum, regardless of the financial condition of the patient. Preparations are being made for distribution also of the therapeutic serums for infections of types V, VII and VIII. This likewise is to be furnished without charge. In the dis-

tribution centers the Neufeld method of typing is used almost exclusively. In a few instances the Sabin slide agglutination method is employed, either alone or in conjunction with the Neufeld method.

In order to conserve the available serum and to make it go as far as possible, two restrictions are being observed. No serum is given until the laboratory report indicates that the patient for whom it is requested is suffering from type I or type II infection, and then only for patients who have been ill for not more than four days. Physicians are requested to sign cards to this effect. Physicians who have received serums are expected to furnish the department of health with information concerning the patient after determination of the case. According to official report the two restrictions mentioned have encountered little criticism although it would seem that it is very difficult to determine precisely the duration of the pneumonia from onset to the time when the typing is done. The Massachusetts authorities are of the opinion that this time restriction aids in emphasizing the necessity of early typing and early treatment, which is so important in pneumonia. They admit that there are patients who after the fourth day of illness, might be benefited by the administration of serum, they are, however, prevented from changing the rule because of economic considerations. The distributing centers are authorized to issue serum in amounts of 60,000 units for type I and 100,000 units for type II. An additional 60,000 units for either type is permissible for the following three categories of patients:

(a) Maternity patients

(b) Patients with a positive blood culture of type I or type II pneumococci in their blood

(c) Patients whose temperature does not fall to 101 F or under within eighteen hours, or in whom the temperature, after having fallen, has again risen to or above 101 F in forty eight hours

In individual instances more than 60,000 units is given for the treatment of patients with persistent bacteremia or to pregnant women.

Arrangements are under way to allot larger amounts of serum for older patients, as it has been demonstrated that persons past middle age do not gain as much benefit from an average amount of serum as do younger persons.

In New York State the regulations differ somewhat from those of Massachusetts. Up to the beginning of this year only concentrated type I antipneumococcus serum was distributed. During the year 1936 approximately 5,700 vials of 20 cc each of concentrated type I were distributed. The 20 cc vials of type I contain 25,000 therapeutic units. Type II is put up in 24 cc vials, containing 20,000 units, and its distribution began on Dec. 30, 1936.

The serums are distributed through laboratory supply stations. There are 106 of these for the distribution of type I serum and thirty-four for type II serum. The number of the latter will be increased as the need is demonstrated and the supply of serum becomes sufficient to meet increased demands.

In New York State, as in Massachusetts, the serum is given away entirely free to all classes of patients, but there is no restriction as to time limit for administration. It is left entirely to the physician's discretion. He is, however, requested to fill out a form giving certain fundamental data in order to obtain the serum. In New York State the minimum dose is

¹³ Rogers E. S. Control of Pneumococcus Pneumonia. *Am J Pub Health* 27: 133 (Feb) 1937

recommended is considerably higher than that in Massachusetts, 100,000 units for type I cases and 160,000 for type II cases

VII SERUM PRODUCTION IN NEW YORK CITY

The New York City Health Department Bureau of Laboratories has been producing and distributing antipneumococcus serum for eleven of the more prevalent types. Table 2 gives the statistics of production of the various types during the years 1935 and 1936 in terms of vials.

The production of effective serums for the different types of pneumonia is not a simple matter. Horses must be immunized over an average period of almost fifteen months to develop antibody content of sufficient potency, some horses respond better than others. During the past few years the Bureau of Laboratories has maintained at Otisville an average of about forty horses for antipneumococcus serum. Part of the work involved in the process of concentration of the serum is done in New York City.

During the past year the Bureau of Laboratories of the Department of Health produced \$85,000 worth of antipneumococcus serum. It is estimated that each horse produces about \$2,000 worth of serum a year. These figures are based on the actual cost of production and are the same as those of the Massachusetts State Health Department Laboratory, namely, 35 cents per thousand units of concentrated serum, type I and type II. The cost varies somewhat with the type and whether the serum is monovalent or bivalent. For practical purposes, 35 cents per thousand units is a basic figure. Assuming the average therapeutic dose to consist of 100,000 units, the average cost of serum per patient is \$35.

In planning for the future health department authorities must determine the extent to which the city is ready to make available this life-saving remedy to all those in the population who are unfortunate enough to develop the disease and are unable to purchase the serum from commercial laboratories.

It is the opinion of this committee that in view of the communicable character of the pneumococcic infections and their mode of spread through congestion in places of work, public conveyances, schools and the like, the city should provide this serum on the same basis as it provides all other biologic products—serums, antitoxins, toxoids and vaccines.

The cost of community provision of antipneumococcus serum can readily be established if the demand is forecast. In part IV of this report it has been estimated that on the average 10,000 persons in New York City may be in need of serum during the year. In view of the slowness with which this specific serum therapy has been adopted, it is unlikely that a maximum demand will develop during the next year. It is more likely that the demand may not exceed the requirements of 5,000 persons. On the basis of \$35 as the average cost, the expenditure for serum which the city would have to incur would be \$175,000. It is possible that the demand in the future may exceed this estimate. In the opinion of this committee, it is advisable for the city to plan for the increased production of the serum rather than depend on the supply from commercial laboratories. In view of the experiments with rabbit serum, it is possible that, in the future, most if not all of the antipneumococcus serum may be produced in rabbits. This may decrease the cost.

VIII FACILITIES FOR CLINICAL CONSULTATION AND FOR TYPING

The successful administration of serum is a highly technical procedure requiring expert knowledge. Advice is often asked of the Bureau of Laboratories concerning technical procedures and no one with the necessary clinical experience and time is as yet available to render the required service. It is the opinion of the committee that a consulting service should be established similar to that provided by the laboratory in connection with meningitis and other communicable diseases of the central nervous system. It should be headed by a physician well trained in the knowledge and technique of serum therapy. A physician of this character should command a salary commensurate with the chiefs of other clinical services in the department of health. In addition, the health department should make arrangements with a number of men located in various districts of the city who are well known for their competence in this field and who would be willing to respond to calls for consultation service at moderate fees which the

TABLE 2—Production Number of Vials of Antipneumococcus Serum Distributed for Therapeutic Use During 1935 and 1936

Types of Serums	1935			1936		
	Uncon- centrated*	Con- centrated†	Total	Uncon- centrated*	Con- centrated†	Total
I and II (bivalent)	3 646	1 101	4 837	2,548‡	1 416‡	3 964
II and V (bivalent)	170‡	339	509	236‡	236	236
III and VIII (bivalent)		413	413	20‡	25	25
I	1 292	406	1 753	1 613‡	615‡	2,228
II		273‡	273		1 601	1 601
IV		352	352		174‡	174
V	380	385	765	333‡	682	1,015
VI		253	253		88	88
VII	567	390‡	957	794‡	110‡	904
VIII	706	366	1 072	1 234	778	2 012
IX		145	145		165	165
XIV	234	307	541	502‡	72‡	574
XVIII		123	123		328	328
XIX		39‡	39		91‡	91
Total	6 993	5 042	12,037	7 024	6 291	13,305

* Vials containing 25 cc of unconcentrated antiserum—potency from 800 to 3 000 units per cubic centimeter average 1,000 units per cubic centimeter.

† Vials containing 10 cc of concentrated antiserum—potency from 800 to 8 000 units per cubic centimeter average 2 000 units per cubic centimeter.

‡ Available only during part of period.

city would be able to pay. It has been estimated that, for a time at least, in Greater New York about ten such men would be required to answer the emergency calls. The cost of such a consulting service, exclusive of the salary of the supervisor, would probably not exceed \$10,000.

As has already been stated, the effectiveness of serum therapy depends on its early administration. Facilities should be provided for quick diagnostic laboratory service. It is suggested that at least one laboratory be established in every borough for type determination, these laboratories to be centrally located and available daily to all physicians from 10 a m to 6 p m or later. In view of the fact that such diagnostic laboratory work is sometimes needed during the night, it is recommended that one of the laboratories be maintained throughout the night. Each laboratory would require two technicians. The committee therefore recommends that provision be made for fourteen technicians (two for each of the six typing stations and two to act as substitutes). The average salary of a technician is about \$1 000 a year. This would add to the budget about \$14 000 annually. Not all of this sum should be

charged to pneumonia, because during the months when pneumonia is not prevalent these technicians would be assigned to other work in the Bureau of Laboratories, which is understaffed

IX THE PNEUMONIAS AS A PUBLIC HEALTH PROBLEM

Early recognition and early serum treatment are needed to check the spread of pneumonia. Treatment of the pneumonias requires the same aseptic technic that applies to other communicable diseases. The incidence and mortality of communicable diseases have been lowered by segregation in special hospitals. It is therefore recommended that pneumonia patients treated in hospitals be properly segregated and cubed.

In view of the emergency character of the pneumonias, the hospitals should consider pneumonia patients in the same category with acute surgical cases, from the standpoint both of immediate preferential admission and of emergency service, night or day, by responsible members of the clinical and the laboratory staffs.

X RECOMMENDATIONS¹⁴

1 During the next few years, departments of health should engage in a vigorous campaign against pneumonia. Special divisions of pneumonia service should be established under the guidance of properly qualified physicians.

2 Through the regular medical channels, physicians should be made cognizant of the fact that serum is life saving in certain types of pneumonia and that the particular type of pneumococcal infection from which the patient may be suffering should be determined at the earliest possible moment. Free facilities for the rapid determination of the type of infection should be made available in each community at all times, day and night.

3 Because of the communicable nature of the pneumonias, it is highly desirable that pneumonia patients in hospitals be segregated in cubicles and that a complete aseptic technic be followed.

4 Pneumonia patients should be considered in the same urgent category with emergency surgical cases. Certain physicians on the attending staff should be made responsible for the treatment of these patients and should be on call day and night, as is the custom in the surgical services.

5 In connection with the divisions of pneumonia service of health departments, a clinical consultation service should be established to aid physicians in the administration of serum therapy and in the taking of specimens of blood and sputum for bacteriologic study.

6 In all instances of death from pneumonia, physicians should be requested to report the precise nature of the invading organism.

7 Concentrated serum for the prevailing types of pneumonia should be made available without cost to physicians requesting it, provided the type of pneumonia has been ascertained prior to the request for serum.

8 Control work of pneumonia and the production of therapeutic serums should not be allowed to interfere with the fundamental research activities of the laboratories.

9 The results obtained in New York and Massachusetts justify the appropriation of adequate funds to health departments for pneumonia control work and continued research.

PROGNOSIS OF DIVERTICULITIS AND DIVERTICULOSIS OF THE COLON

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Information is scanty as to what happens to patient who have diverticula of the colon. The following questions are frequently asked: How often is diverticulosis followed by diverticulitis? Have physicians been too strict or too casual in their attitude toward diverticulosis? Although the medical treatment of diverticulitis is rather simple, is it adequate? How many patients who have diverticulitis eventually undergo surgical treatment? What is the prognosis when surgical treatment is necessary? Is there enough evidence to warrant the assumption that there is more than a coincidental relationship between carcinoma of the colon and diverticulitis?

Those who are interested in a study of diverticulitis and diverticulosis are referred to a complete summary¹ that appeared last year. The present study was undertaken solely to evaluate the prognosis; it covers the decade from Jan. 1, 1919, to Jan. 1, 1929. Approximately 1,100 cases of diverticula of the colon were reviewed but this figure cannot be used to estimate the incidence of this condition. Naturally, all cases of diverticulitis were analyzed and follow-up data were sought in 376 cases but it seemed rather futile to persist with an analysis of the follow-up data in all cases of diverticulosis. After the data were studied in the first 220 cases of diverticulosis the data in the remaining cases were discarded, as they did not show anything significant. The cases which were studied were divided into the following groups: Group 1 includes ninety-nine cases of diverticulitis in which the patients had been treated surgically before they came to the Mayo Clinic or were subjected to operation after they came to the clinic; group 2 includes 277 cases of diverticulitis in which medical treatment was employed, and group 3 includes 220 cases of diverticulosis.

Information as to the future course of the disease after the patients left the clinic was obtained by examination or by letter in 86 per cent of the cases.

Rankin and Brown,² W. J. Mayo,³ and Ochsner and Bagen,⁴ in three separate reports from the clinic, said that the incidence of diverticula of the colon is approximately 5.6 to 7 per cent. Spriggs and Marver⁵ found diverticula of the colon in 100 (10 per cent) of 1,000 consecutive cases in which roentgenologic examination of the gastro-intestinal tract was performed. In nine of the 100 cases the lesion was in the prediverticular stage. Diverticulitis was present in from 12 to 17 per cent of the cases of diverticulosis reported by Rankin and Brown, W. J. Mayo, and Ochsner and Bagen. The ratio of diverticulitis to diverticulosis is one to six or eight.

From the Division of Medicine, the Mayo Clinic. Read before the Section on Gastro-Enterology and Proctology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1937.

¹ Lundberg, Karl. The Symptomatology of Diverticula Formation of the Colon Especially with Regard to the Catalase Action in Fermentation. *Acta med. Scandinav. suppl.* 72: 1-286, 1935.

² Rankin, F. W., and Brown, P. W. Diverticulitis of the Colon. *Surg., Gynec. & Obst.* 50: 836-847 (May) 1930.

³ Mayo, W. J. Diverticulitis of the Sigmoid. *Brit. M. J.* 2: 576 (Sept. 28) 1929.

⁴ Ochsner, H. C., and Bagen, J. A. Diverticulosis of the Large Intestine. An Evaluation of Historical and Personal Observations. *Ann. Int. Med.* 9: 282-296 (Sept.) 1935.

⁵ Spriggs, E. I., and Marver, O. A. Intestinal Diverticula. *Q. J. Med.* 10: 1-34 (Oct.) 1925.

The type of treatment employed in cases of diverticulitis also is of interest. Surgical treatment was employed in forty-eight, or 21 per cent, of the 227 cases reported by Rankin and Brown. Operation was performed in ninety-nine, or 26 per cent, of the 376 cases included in the present report. It therefore would appear that surgical treatment would be required in one of every four or five cases of diverticulitis of the colon. However, as will be shown later, the results of this study do not justify the conclusion that diverticulitis will develop in approximately 15 per cent of cases of diverticulosis or that surgical treatment will be required in 20 per cent of cases of diverticulitis.

The age and sex of the patients in this series of cases are shown in table 1. The ratio of males to females was 1.6:1, in the cases in which surgical treatment was employed this ratio was 1.9:1 and in the cases in which medical treatment was employed the ratio was slightly more than 1.6:1. While the difference in the incidence among the two sexes is not great, it does indicate that diverticula occur more frequently among males than among females. In this connection it is interesting to note that among all patients who are seen at the clinic the ratio of males to females is 1.04:1.

In the 527 cases in which the weight of the patients was given, 297 patients were overweight, 180 were of normal weight and fifty were thin. A plump patient is more likely to have diverticula of the colon than is a thin patient, but leanness does not make patients immune to this condition.

The diverticula, as determined by roentgenologic examination, were situated in the sigmoid colon in 290 cases, the sigmoid colon and descending colon in 123 cases, the left half of the colon in forty-nine cases, the entire colon in forty-three cases, the cecum and ascending colon in five cases, the hepatic or splenic flexure in five cases, and the transverse colon in three cases. In forty-one cases the site of the involvement was not stated and in thirty-seven cases roentgenologic examination of the colon was not performed.

TABLE 1—Age and Sex of Patients with Diverticulitis and Diverticulosis of the Colon

Sex	Age Years					
	20-29	30-39	40-49	50-59	60-69	70-84
Males (367 or 61 per cent)*	0	18	63	146	109	31
Females (229 or 39 per cent)	1	8	41	100	69	10
Total (596)	1	26	104	246	178	41

* The ratio of males to females was 1.6:1.

Proctoscopic examination is of more value than may be thought. It not only enables the proctologist to determine the presence or absence of carcinoma of the rectum but may also enable him to see far enough into the rectosigmoid to diagnose an inflammatory disease and it may permit him to see the mouths of the diverticula. Proctoscopic examination was performed in 218 of the 596 cases. This procedure disclosed probable trouble in or above the rectosigmoid in fifty-two cases and enabled the proctologist to see the diverticula in twenty cases. It also reveals the length of the healthy bowel distal to the diseased segment. This information is helpful to the surgeon in cases in which he hopes to effect an anastomosis following resection.

SYMPTOMS

The symptoms in the three groups of cases are shown in table 2. Although the symptoms have been described in other articles, a few moot points may be of interest. Bleeding from the bowel occurs more frequently in cases of carcinoma of the colon than it does in cases of diverticulitis. In one case of diverticulitis of the sigmoid colon in which bleeding was severe, resection revealed that the hemorrhage was the result of an associated angioma. One may wonder why bleeding was not recorded in any of the cases in group 2. While

TABLE 2—Symptoms of Diverticulitis and Diverticulosis

Symptoms	Cases					
	Group 1		Group 2		Group 3	
	Num ber	Per cent	Num ber	Per cent	Num ber	Per cent
Diarrhea	12	12	35	12	39	17
Bleeding (not attributable to other causes)	4	4				
Inflammatory symptoms	32	32	98	35		
Obstructive symptoms	67	68	149	64		
Purulent rectal discharge		No data	9	3		
Fistula of bladder	15	15	3	1		

bleeding did occur in a few of these cases, careful scrutiny of the history and proctoscopic observations seemed to indicate that the bleeding was purely anorectal in origin.

Both Ochsner and Bagen, and Willard and Bockus said that bleeding occurred in 7 per cent of cases of diverticulitis and it is possible that we may have been overly critical in our interpretation of the cause of bleeding in this series of cases. Purulent discharge occurred in nine, or 3 per cent, of the cases in group 2. The discharge was blood tinged and resembled that which follows the rupture of a furuncle.

These cases possibly should have been included in the group of cases in which bleeding occurred. While all writers agree that bleeding may occur in diverticulitis of the colon, it is important that carcinoma of the colon should not be overlooked in cases in which there is bleeding from the bowel.

We agree with Willard and Bockus,⁶ who expressed the opinion that diverticula which appear harmless at the moment may have been or will be the seat of inflammation. However, as a basis for prognosis, the cases have been divided into the three groups, according to the nature of the lesions when the patients first came to the clinic. On this basis, no symptoms are held referable to diverticulosis. The symptom diarrhea, irrespective of any final diagnosis as to its etiology, seems to occur less frequently in cases of diverticulitis than it does in cases of diverticulosis, hence when it is known that there is inflammation of diverticula and yet diarrhea is uncommon, it would not seem logical to hold that diverticulosis is a possible reason for diarrhea, although this opinion occasionally is given to patients.

Stress has been laid on the obstructive phenomena of diverticulitis, but in a third of the cases inflammatory symptoms, such as pain, fever and leukocytosis, predominated and purulent discharges occasionally were present. The cases in which fistulas of the bladder occurred are especially noteworthy, as in twelve of the eighteen cases in which this complication occurred there was little or no evidence of obstructive symptoms, but the symptoms were chiefly referable to the neighboring

6 Willard J. H. and Bockus H. L. Clinical and Therapeutic Status of Cases of Colonic Diverticulosis Seen in Office Practice. *Am J Dig & Dis & Nutrition* 3: 580-585 (Oct.) 1936.

inflammation and the perforation into the bladder. In one of these cases cystostomy was performed, for the vesical lesion was thought to be a diverticulum of the bladder, but it was found to be a fistula which had resulted from the perforation of a diverticulum of the sigmoid colon. The presence of vesical symptoms plus a history of the passage of gas through the urethra is practically diagnostic of a fistula.

RELATIONSHIP OF DIVERTICULITIS AND CARCINOMA

The question of the relationship of diverticulitis and carcinoma is interesting, if only from the historical point of view, as the early development of the surgical treatment of diverticulitis was the result of the study of cases in which lesions which were thought to be carcinoma of the colon proved to be diverticulitis. The first instances of excision of the colon for diverticulitis during the life of the patient was reported in 1907 by W. J. Mayo, Wilson and Giffin.⁷ In a former report four instances of carcinoma were noted in 227 cases of diverticulitis, while in another report thirteen instances of carcinoma were noted in 208 cases of diverticulosis or diverticulitis. Data regarding the presence or absence of carcinoma have been obtained in eighty-eight of the

TABLE 3—Results of Surgical Treatment in Ninety-Nine Cases (Group 1) of Diverticulitis

Results	Years Since Patients Were Admitted to the Clinic					Total
	1-5	5-10	10-15	15-20	20+	
Patients cured	5	12	12	4		33
Condition unchanged	6	6	6	1		19
Related deaths	14	2				16
Unrelated deaths or cause of death unknown	12	4	4			20
No data						11

cases in group 1, in 238 cases in group 2 and in 192 cases in group 3. Carcinoma of the intestine did not occur in any of the cases in group 1. In five of the cases in group 2 carcinoma developed after the patients left the clinic and there is a vague possibility that carcinoma of the intestine developed in three other cases in this group. In fifteen of the cases in group 3 (diverticulosis) the patients had carcinoma when they first came to the clinic or carcinoma developed after they left. There was no evidence of any direct connection between the diverticula in any of the cases. In six of the cases in group 3 the carcinoma occurred at sites where there were not any diverticula, and in six other cases in the same group, in which operation was performed for carcinoma of the rectosigmoid or sigmoid colon, there was no evidence of diverticulitis. In the five (or eight) cases in group 2 the information regarding the occurrence of carcinoma was obtained by letter, therefore we are unable to express any opinion regarding the relationship of carcinoma and diverticulitis in this group of cases. A segment of the colon, particularly the sigmoid colon, that is the site of diverticulitis may later be the site of carcinoma, but such an occurrence would seem to be chiefly a matter of chance.

RESULTS OF SURGICAL TREATMENT OF DIVERTICULITIS

Ninety-nine of 1,100 patients who had diverticula of the colon received surgical treatment for diverticulitis before or after they came to the clinic. This does not indicate that 9 per cent of patients who have diverticula

of the colon will require surgical treatment, it merely represents the percentage that happened to be encountered in a particular decade. We are unable to give any prognostic figures as to the possible development of diverticulitis or the number of patients who will require surgical treatment.

In twenty-five of the ninety-nine cases in group 1 surgical treatment had been employed before the patient came to the clinic. In eleven of these cases no further operation was indicated, but in the remaining eight cases in this group some type of operation was performed after the patients came to the clinic. Ten or 11 per cent, of these patients died in the hospital and four other patients died from two to four months after their dismissal from the hospital.

We endeavored to determine how many of the patients may have received some type of medical management before operation was performed. In fifty-four cases it appeared that the true condition either was not apparent or that the condition of the patient made it inadvisable to delay the operation, and there is little evidence that preliminary medical treatment was attempted in these cases. In thirty-six cases the patient had had one or many attacks before operation was performed and it is evident that some type of medical treatment was employed. Oddly enough, we have a record of only nine cases in which a definite medical regimen was employed prior to operation. In six of these cases operation was performed from one to eight months after the patients were first seen and in the remaining three cases the patients were not operated on until three, five and six years, respectively, after they first were observed. These observations and the fact that four of the 277 patients in group 2 were, or should have been, operated on seem to indicate that a certain inevitableness pursues some patients who have diverticulitis, in other words, it seems to be their fate that symptoms will be entirely absent, moderate or severe almost from the onset.

The results of treatment in the cases in group 1 are shown in table 3. It is beyond the scope of this paper to consider the surgical phases of diverticulitis. It is generally accepted that diverticulitis is a surgical problem in the presence of such complications as abscess or perforation. In the fifteen cases in which operation was performed because of perforation into the bladder three of the patients died after the operation and nine patients reported that they did not have any more trouble, no report was obtained in the remaining three cases. This complication obviously is a serious one, but the prognosis is favorable if the immediate risk can be surmounted.

Colostomy and subsequent closure of the colonic stoma may be successful in some cases of diverticulitis. This procedure was successful in four cases but failed in four cases in this series. An inflamed perforated diverticulum was excised and the colon closed immediately in six cases, the results were satisfactory in five of these cases but a fecal fistula persisted in the sixth case. A localized abscess was drained in eleven cases in eight of these cases recovery occurred without any other operation, but in the three other cases a fecal fistula persisted. In such cases it would seem as if a single diverticulum had perforated and resulted in an abscess. Resection of the involved segment of the colon was performed in forty-one cases. In the thirteen cases in which the resection was performed after a preliminary colostomy there were two deaths. There were three deaths in the twenty cases in which a Mikulicz type of

⁷ Mayo W. J., Wilson L. B. and Giffin H. Z. Acquired Diverticulitis of the Large Intestine. Surg. Gynec. & Obst. 5: 8-15 (July) 1907.

resection was performed and four deaths in the eight cases in which resection and anastomosis were performed at the same time

Thirty-six of the patients in group 1 are known to have died. Fourteen of these patients died at the clinic or in less than a year after they left the clinic. Their deaths were wholly or partially attributable to diverticulitis. The condition of the intestine of the patients who have lived for more than a year after leaving the clinic is of interest. Of the patients who have lived from one to five years, seven reported that the condition of their intestine was normal and one patient reported that it was not normal, three other patients are known to have died but we have no data as to the cause of their death. Of the patients who have lived from six to ten years, four reported that their intestinal condition was normal and one reported that it was not normal, three other patients are known to have died but the cause of their death is unknown. Of the patients who lived for from eleven to fifteen years, two reported that their intestinal condition was normal, another patient is known to have died but the cause of death is not known. It is presumptuous to assume that there was no intestinal trouble in the seven cases in which the cause of death is unknown, but it is probable that disease of the intestine was not a dominant problem.

If we omit the eleven cases in which the condition of the patient is not known and the seven cases in which the patients died of unknown causes, there will remain eighty-one cases which may be used to evaluate the results of surgical treatment. Thirty-three patients are still living and thirteen patients died, one or more years after operation, of unrelated causes, therefore it may be said that forty-six of the eighty-one patients were benefited by the operation. Sixteen patients died, immediately after operation or later, as a result of the disease and nineteen patients have continued to have more or less intestinal trouble, therefore surgical treatment was unsuccessful in thirty-five cases. Although the results of our observation suggest that in certain cases of diverticulitis the outcome is inevitable, that is either good or bad, in recent years a determined effort has been made to treat this condition by medical measures. However, if complications ensue, operation should not be delayed. The operation should be the safest procedure, which usually is a colostomy or incision of an abscess. The surgeon then should wait for the acute symptoms to subside before he attempts any other operative procedure.

RESULTS OF MEDICAL TREATMENT OF DIVERTICULITIS

The results of medical treatment, which was employed in 277 cases of diverticulitis (group 2) are shown in table 4. We like to point with pride to the 118 patients who reported that they were well, but the sixty-one patients who reported that they still had intestinal trouble and the fifty-nine patients who are known to have died are of especial interest.

We have made an effort to classify in the same group all patients who reported that they had a persistence of the intestinal trouble, regardless of whether the symptoms were very mild or occurred in the form of severe attacks which lasted for several days. The majority of patients who still had intestinal trouble said that they were able to live in comparative comfort if they were careful about their diet, if they took oil regularly or if they eliminated nuts and coarse foods

from their diet. By adhering to a definite regimen they have learned to minimize the frequency and severity of the attacks. Two patients who were operated on for diverticulitis several years after they left the clinic reported that they were well six and ten years respectively after the operations. One patient who was treated medically for several years finally was advised to submit to operation but refused, the patient died three months later. Another patient who refused operation at the clinic was operated on seven years after leaving the clinic, this patient died after the operation. It is significant that twenty-three of the sixty-one patients who reported that they still had more or less intestinal trouble have lived for eleven or more years since they first came to the clinic. They did not express any regret that they had not been operated on and they appeared satisfied with their condition.

Hence, in the cases in group 2, only two of the patients who are still living and two of the patients who are known to have died required surgical treatment because of the diverticulitis. We previously said that surgical treatment was employed in ninety-nine, or 26 per cent, of the cases of diverticulitis but an analysis

TABLE 4—Results of Medical Treatment in 277 Cases of
Diverticulitis (Group 2)

Results	Years Since Patients Were Admitted to the Clinic					Total
	1-5	5-10	10-15	15-20	20+	
Patients cured	12	37	60	9		118
Condition unchanged	19	19	15	8		61
Related deaths	8(?)	2				
Unrelated deaths or cause of death unknown	21	20	7	1		49
No data						49

of the results obtained in the 277 cases in group 2 does not indicate that from 20 to 25 per cent of patients who have diverticulitis eventually will require surgical treatment. About the only conclusion that is warranted is that patients who have uncomplicated diverticulitis and who follow a medical regimen seldom require surgical treatment.

Of the fifty-nine cases in which death is known to have occurred, the cause of death and the condition of the bowel were not known in twenty cases and death was not related to the diverticulitis in twenty-nine cases. Two patients who were advised to submit to operation at the clinic died following operation which was performed elsewhere. One patient, aged 73 years, was so ill when he came to the clinic that operation was impossible, this patient died a month later. Seven other patients were operated on elsewhere for some intestinal lesion which was reported as "cancer" or obstruction but it is doubtful whether the operation was performed for diverticulitis in any of these cases. Of the fifty-nine patients who are known to have died, about a third (nineteen) had more or less intestinal trouble and a third (twenty) had little or no intestinal trouble in the remaining years of their life. In the remaining third of the fifty-nine cases, no information was obtained regarding the persistence of the diverticulitis.

In thirty-nine of the cases in group 2 we were unable to obtain any data regarding the condition of the patients after they left the clinic, twenty more patients are known to have died but it was impossible to obtain data regarding the intestinal condition after the patients left the clinic. If these fifty-nine cases are omitted, there will remain 218 cases which may be used to

evaluate the results of medical treatment. The results were satisfactory in 63 per cent and unsatisfactory in 37 per cent of these cases (table 4). We are attempting to be very critical, but three fourths of the patients who reported that treatment did not fully correct their intestinal condition have had relatively little intestinal trouble and have been able to perform their usual duties without serious handicap as far as the diverticulitis was concerned.

MEDICAL TREATMENT OF DIVERTICULITIS

Rest in bed is important, patients with severe diverticulitis should be kept in bed for at least three weeks. Nothing should be given by mouth for the first day or two, in order to rest the inflamed colon further. An adequate amount of fluid should be administered parenterally. The application of heat has proved beneficial. When available, short wave diathermy has proved very efficient. When this is applied over the affected region, two or three times daily, it seems actually "to melt" the inflammation. The Elliott treatment also may be used but it is less satisfactory for men than it is for women. The insertion of the tube into the rectum has proved uncomfortable in some cases, but when the bag is inserted into the vagina there is no distress and the heat penetrates into the sigmoid region. If diathermy or the

add to the bulk of the stools, plain agar agar is safe and a soft, bulky stool possibly may gently dilate a narrowed bowel. Many patients who have used liquid petrolatum and agar agar for years attribute their freedom from attacks of diverticulitis to this regimen and regulation of their diet. Drugs do not seem to be of value. Tincture of belladonna may be administered but we are doubtful whether it is of any value.

PROGNOSIS IN CASES OF DIVERTICULOSIS

As previously stated, more than 700 cases which were reviewed indicated that the diverticula were merely incidental observations. The first 220 cases were taken for a follow-up study. Possibly the inclusion of more cases would have changed the apparent conclusion, but this would seem doubtful. The results in these cases are shown in table 5.

The term "well" refers only to the question of any intestinal symptoms attributable to diverticulitis. In seven cases the cause of death is unknown. In the forty other cases in which death occurred there was one in which there is a possibility that diverticulitis developed and death followed operation nine years after the patient left the clinic. Hence, so far as this study permits conclusions, the probability of the later development of diverticulitis is remote. By no means should this suggest an indifferent, careless attitude toward the presence of diverticula, and one should not fail to caution these patients about their diet and bowel habits. It does indicate that one should not consider diverticulosis as a diagnosis of the cause of abdominal symptoms.

It may seem paradoxical to learn that of this group of 192 cases in which there are data there was only one instance and that one is not certain of diverticulitis. Certainly, when 139 patients lived six or more years without symptoms of diverticulitis one cannot justify a statement such as one of us (P. W. B.) previously made, namely, that diverticulitis will develop in 17 per cent of cases of diverticulosis.

Figures on the incidence of diverticula would seem correct, but, so far as this study permits conclusions, diverticulosis seems to remain as such. We are greatly perplexed and can give no explanation for the obvious fact that all diverticulitis must start from diverticula but that it develops only in some cases.

SUMMARY

Follow-up data were obtained in 86 per cent of a series of 596 cases of diverticulitis or diverticulosis. In a few cases of simple diverticulitis, complications may develop and require surgical treatment. Surgical treatment was employed in ninety-nine cases of diverticulitis, fifty-seven of the patients were cured and 43 per cent either continued to have intestinal trouble or died after the operation. A peculiar predestination seems to occur in cases of diverticulitis, symptoms may be entirely absent or they may be moderate or severe. It is impossible to say how many patients who have diverticulosis later will suffer from complicated or uncomplicated diverticulitis. Medical treatment of diverticulitis consists of rest, the application of heat, regulation of the diet and the oral administration of olive oil. In 63 per cent of cases this type of treatment was successful, but in 37 per cent of cases the results were only fair or poor. However, many of the latter group of patients were able to live in comparative comfort. The results of our observations confirm previous opinions that the relationship between diverticulitis and carcinoma of the colon probably is incidental rather than actual. In a

TABLE 5—Results in 220 Cases of Diverticulosis (Group 3)

Results	Years Since Patients Were Admitted to the Clinic					Total
	1-5	5-10	10-15	15-20		
Patients cured	31	43	60	11		145
Symptoms developed	0	0	0	0		0
Related deaths		1(?)				47
Unrelated deaths or cause of death unknown	22	19	4	1		28
No data						

Elliott treatment cannot be used, electric pads or hot packs, which should not be too heavy, are always available and of value. While two-way rectal irrigations with hot physiologic solution of sodium chloride provide another valuable source of heat, such irrigations may prove irritating and increase the discomfort in some cases. As a rule, we prefer to use a small warm enema to cleanse the bowel. In the acute stages of the disease, retention enemas of warm olive oil, which are given while the patient is in the knee-chest position, are often very comforting and help to promote bowel movements. When the patients are thin and the number of calories is of no concern, the daily administration of 2 or 3 ounces (from 30 to 60 cc.) of olive oil may produce enough fatty residue to stimulate bowel movements. Liquid petrolatum has proved useful, the number of patients who say that small doses of this oil, administered daily, contribute to lessen their trouble far outnumber those who say that the oil acts as an irritant. When administered in small doses it rarely will cause irritation, leakage or pellet-like stools. As the acute stage of the disease subsides, food should be given orally, the diet at first should consist of fruit juices, rice, jello, arrowroot cookies and eggs, but it gradually should be increased to a normal sensible diet. It may be wise to give the patient vegetable purees in the beginning, but it is not necessary to continue such a diet indefinitely. Substances and foods that should be excluded from the diet are bran, whole wheat, popcorn, nuts, and berries which have large seeds. Early in the "bran fad" some patients who were allowed to eat bran were certain that it stimulated bowel movements, while others felt that it was an irritant. If one desires to

third of the cases of diverticulitis the symptoms are the result of inflammation and in two thirds of cases the symptoms are the result of obstruction and inflammation

ABSTRACT OF DISCUSSION

DR HENRI L BOCKUS, Philadelphia There is little in the literature in the way of follow-up studies over many years and I was particularly interested in the paper for that reason. Last year in collaboration with Dr John Willard I went over a group of our office cases. They represent a somewhat different type from the patients seen by Drs Brown and Marcle. In their group were a great many of the complicated cases, patients who went to the clinic because they were seriously ill and had to be operated on. Eight per cent of our office patients, having had barium sulfate enemas had pouches in the large bowel. The average age was 55 years. We encountered none under 30. In 50 per cent of our patients with barium enema studies we felt justified in making a diagnosis of irritable colon. It is rather fortunate that symptoms from the irritable colon and from appendicitis occur in the younger age groups. They are rather rare after the age of 55. I do not know what the authors meant when they said that only one or two of their patients had diverticulitis. I will agree that it is difficult to decide whether the symptoms are due to irritation of the pouches or whether they are symptoms of an ordinary spastic or irritable colon. We felt that 22 per cent of the cases we studied showed symptoms which might have been due to inflammation in the pouches. The authors probably referred to the rarity of complications of diverticulosis in the group with simple diverticulosis when first seen at the clinic. Dr Bue does most of the sigmoidoscopic examinations at the Mayo Clinic. He or his collaborators have seen twenty or more of these pouches through the sigmoidoscope. I rather suspect that the third eye which he talked about at the banquet last night must be at the end of his sigmoidoscope. Most of us have not been successful in seeing the pouches. I should like to stress the importance of the differentiation between cancer and diverticulitis. A cancer in the lower six or eight inches of the bowel can almost always be seen. There is rarely sufficient spasm or edema distal to the growth to obscure it. However, in diverticulitis, spasm and edema form such a striking feature that one cannot visualize the actual area of disease. This I think, is an important differential point.

DR JULIUS FRIEDENWALD, Baltimore At one time diverticulosis and diverticulitis were considered rather infrequent but it is now known that they are of quite common occurrence. It is a well established fact that many persons go through life with multiple diverticula without symptoms and that this condition may be detected accidentally, during an x-ray investigation. It is likewise well known that not infrequently evidences of inflammatory changes are noted which give rise to symptoms of a more or less severe type. While many of these cases were formerly treated surgically with a varied degree of success, many according to our experience nowadays yield most satisfactorily to medical measures. Of our acute cases, satisfactory relief was obtained in more than 60 per cent in this manner and but 16 per cent required operative procedures. In the acute stages whenever medical treatment does not afford relief or does not lead to rapid improvement or when exacerbations in the symptoms occur operation should be promptly undertaken. In the more chronic cases with exacerbations and prolonged remissions of symptoms medical treatment alone not only affords prompt relief but may prevent acute exacerbations in the course of the disease. In many instances under our care patients have been maintained in an apparently normal state free from all symptoms, over a period of many years. I am firmly convinced that a great number of persons with diverticulosis pass through their entire life without manifestations of any inflammatory changes whatever and that many others in whom active inflammatory changes occur become symptom free over a period of many years under appropriate medical treatment alone. This consists largely of a diet free of roughage

with large doses of kaolin to be given once or twice weekly, oil retention enemas and liquid petrolatum by mouth.

DR PHILIP WALLING BROWN, Rochester, Minn. In response to the comment of Dr Bockus I wish to urge caution not to be hasty in putting the blame for vague abdominal complaints on colonic diverticula that happen to be encountered during careful study. One sees an occasional patient who has the idea that the diverticula in the colon explain the diarrhea which, of course is not likely. In no wise do I wish to deprecate the possibility that diverticulitis may ensue, but it is odd how few cases were encountered in this study. In more recent years we have observed the same general trend as Dr Friedenwald has that fewer patients need to be operated on. Certainly, the surgeons are glad to be spared these difficult problems.

MORE RECENT DEVELOPMENTS OF HEART FUNCTION TESTS

GUSTAV NYLIN, MD
STOCKHOLM, SWEDEN

The clinical diagnosis of typical cardiac insufficiency with all the signs of congestive phenomena, as a rule, present no difficulties, but with the appearance of these grave manifestations the prognosis is, as a rule, dubious. As within so many fields in modern medicine, an early diagnosis is striven for so that by means of restrictive measures the breaking down of the vital functions of an organ may be delayed as far as is possible or some-

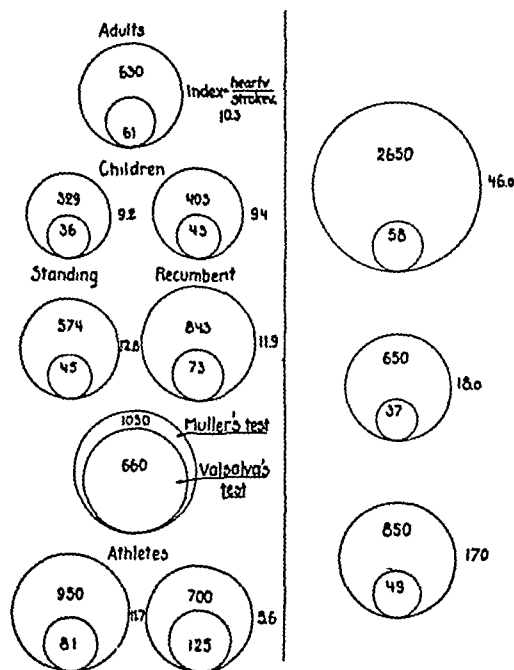


Fig 1—Changes of heart volume and stroke volume during normal conditions and in cases of cardiac decompensation

times even prevented. To arrive at this early diagnosis it is necessary in many cases to make use of functional tests which by increasing the load on the organ aims at elucidating the functions of that organ, in other words a functional diagnosis. There have been abundant opportunities to experience the great importance of this, for example, in the case of the ventricle, kidneys, pancreas and biliary tract. In the case of the heart the great importance of such loading tests has also been realized, but here the appropriate manner of

methodically loading the heart has been difficult to arrive at, and, above all reliable indicators for measuring the work of the heart have been lacking. On the whole, however, there are now three available methods—electrocardiography, roentgenography and physiologic methods for measuring the blood flow, that is to say, the minute volume and the stroke volume of the heart respectively. It was on the basis of these methods that I began my work. I soon found that there was a definite relation between the heart volume and the stroke volume, and I therefore set up an index—heart volume divided by stroke volume.¹ Figure 1 illustrates on one side varying physiologic conditions, on the other, pathologic conditions. The normal material comprises both adults and children. Here are shown the changes between standing and recumbent positions in the same individual. The index, heart volume divided by stroke volume, remains constant. On the other hand, one finds how disproportions appear

for clinical purposes normal values for the heart volume better than by any other method hitherto known, we find that in men of from 20 to 40 years of age the average value of the heart volume is 380 cc per square meter of body surface, with an upper limit of 500 cc per square meter of body surface.

It is a fact that the prognosis in a cardiac case is to a great extent determined by the degree of enlargement, but with less pronounced enlargements it is hazardous to judge the case. At times electrocardiography may show grave alterations in spite of the absence of enlargement; the prognosis is then poor. But in spite of electrocardiography and heart volume determinations in a large number of cases in which perhaps all signs of cardiac insufficiency during rest are absent, one may still be in doubt as to the reserve power of the heart and how the patient reacts to exertion. A function test which illustrates and is calculated to measure this reserve power and to indicate it by a figure

has long been a desideratum. It has been nearly seven years since I began to apply my method at the Serafimer Hospital in Stockholm.⁴ The kind of work has proved to be extremely important. As is shown in figure 3 I have used a specially constructed stairway 1 meter high on which the patients must walk a certain number of rounds at a rate determined by a metronome. The oxygen consumption is first determined during rest and while resting and then exactly between the second and fifth minutes after the cessation of a certain amount of work. The increase in oxygen consumption after the cessation of work is calculated as a percentage of the resting values. In a comprehensive study of normal material, more than 300 persons, this increase has been calculated for three different outputs of work, the lowest being walking on the stairs five rounds at a rate of eighty-eight steps a minute, the second five rounds at

double that rate, 160 steps a minute and the third and the most strenuous work consists of ten rounds at a rate of 208 steps a minute. The highest normal value for the relative oxygen debt, measured according to my method with the different outputs of work, appears to be 30.75 and 112 per cent, respectively.

It is, of course, evident that when walking the same distance a person who weighs 100 Kg. does double the work of one weighing 50 Kg., but the one who is heavier has also a greater oxygen consumption during rest and fasting than the one who weighs considerably less. The consequence is—and this is of immense importance for the value of the test—that the relative oxygen debt, calculated according to this method, is independent of the body weight. This is evident from figure 4, in which no correlation is found between the body weight and the relative oxygen debt with moderate work on the stairs. Nor is this the case with the very strenuous test—ten rounds at 208 steps a minute.

It may now be asked: What is the result of this test in cardiac and pulmonary disease? In a monograph⁵

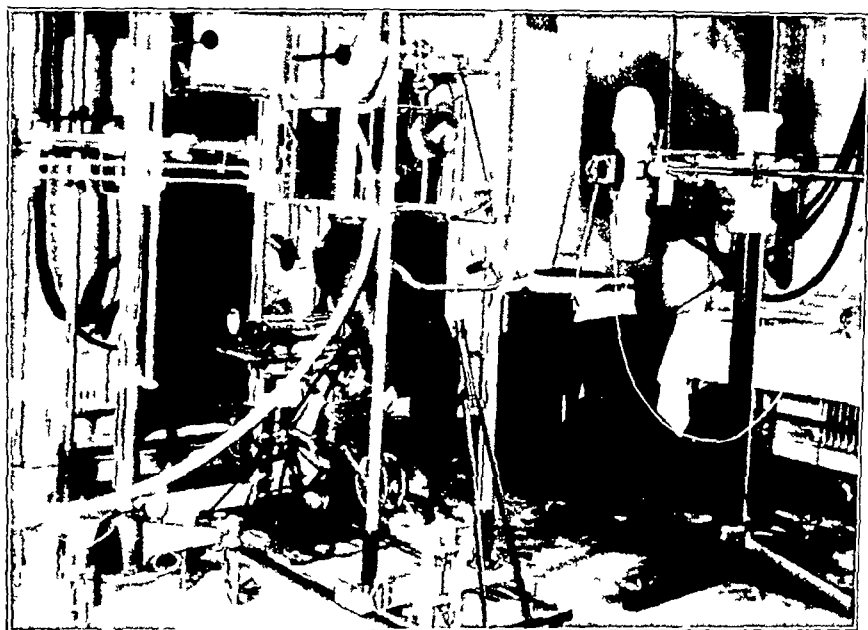


Fig. 2—Arrangements for synchronized X-ray exposures in frontal and sagittal projections even during work on Krogh's bicycle.

with cardiac decompensation. The heart volume increases and the stroke volume decreases.

On the whole it may be said that stroke volume determinations are of but little practical importance in cardiology while, on the other hand, heart volume determinations are in my opinion of dominating importance. By means of special apparatus, as shown in figure 2, Liljestrand, Lysholm and I have been able even to measure the changes both in heart volume and in stroke volume while work was in progress. By using strong rotating anode tubes and making synchronized exposures in the frontal and sagittal directions we have been able to make volume determinations even while the work was in progress, and we found that with an increasing output of work both the heart volume and the stroke volume increase.

On a comprehensive collection of material of healthy persons Zakrisson and I² have been able to establish

1 Nylin, Gustav. The Relation Between Heart Volume and Stroke Volume as a Measure of Cardiac Activity. Svenska Lak Tidning, October 1933. (Communication 1932.)

2 Liljestrand, Lysholm and Nylin. To be published in detail later.

3 Nylin, C. and Zakrisson, N. The Normal Value for Heart Volume. Am. Heart J. To be published.

4 Nylin, Gustav. Clinical Tests of the Function of the Heart. Acta Med. Scandinavica, 1933, suppl. 1.

published in 1933 on this function test I have shown that in typical cases of cardiac insufficiency during rest and with symptoms of congestion, for instance enlargement of the liver and edema, the relative oxygen debt

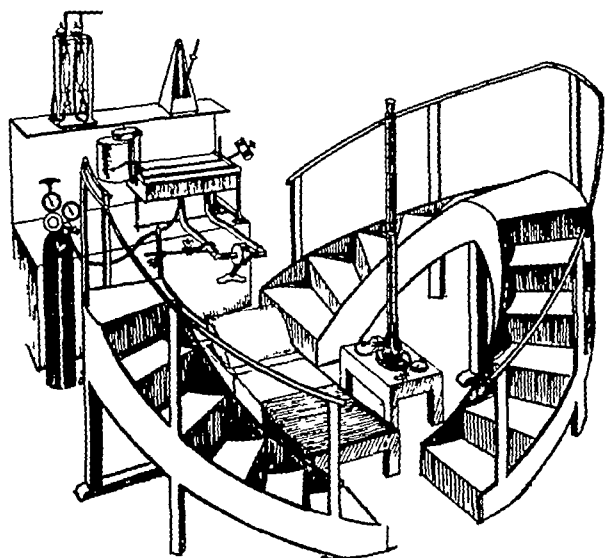


Fig 3—Author's method for working test (The stair is 1 meter high)

in all the cases is higher with the lowest output of work than the highest normal value for healthy persons

I shall now pass on to some cases which illustrate the heart volume determinations and the function tests,

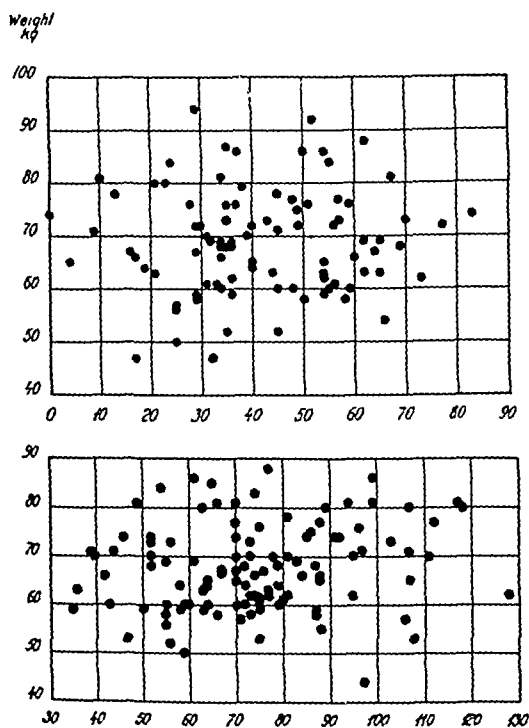


Fig 4—Correlation between the relative oxygen debt and body weight. The abscissa of the upper chart represents the relative oxygen debt at 110 and the abscissa of the lower chart the relative oxygen debt at 100.

set side by side with other observations such as those obtained by electrocardiography, roentgenology and clinical physical examinations

As an example I will describe a case of considerable oxygen debt one attaining a value of 90 per cent, that

is to say, three times the highest normal value for this rate $\frac{1}{88}$, which was of course 30 per cent. The case is one of mitral failure presenting considerable acute enlargement of the liver. Even with these cases of severe insufficiency it may, of course, be of interest to measure the degree of insufficiency, but within this group the function test is of less importance.

On the other hand in cases of latent cardiac insufficiency in which the symptoms of insufficiency are not present during rest and in which all the acute congestive phenomena are conspicuous by their absence, it is of very much greater importance to know how each individual case reacts to exertion. I might mention a

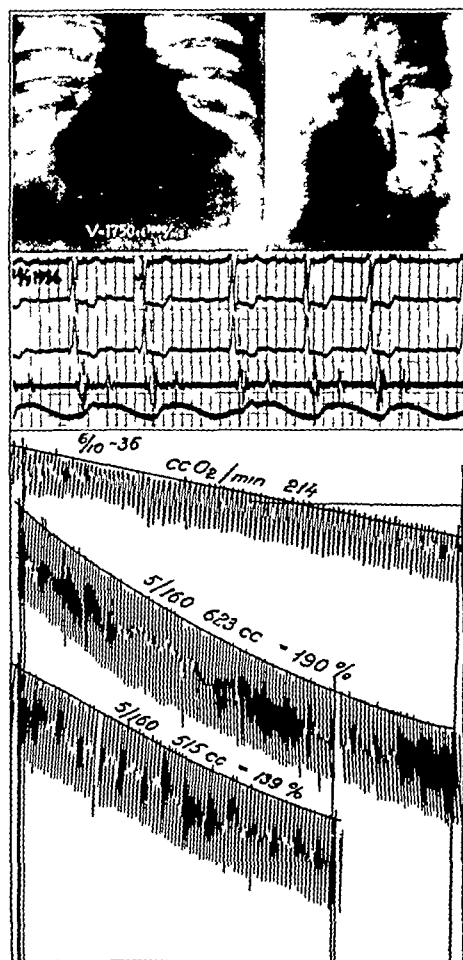


Fig 5—Severe latent cardiac insufficiency in a 26 year old cycle repairer. Mitral and tricuspid insufficiency. The roentgenogram shows enormous dilatation of the heart with a heart volume per square meter of body surface of 1000 cc double the upper limit for normal. The electrocardiogram shows auricular fibrillation extreme right axis deviation coronary insufficiency and positive venous pulse. The function test shows extreme oxygen debt with the moderate test.

case without pronounced congestive phenomena. A man aged 26 with a greatly enlarged heart, more than double the normal size, had mitral and tricuspid insufficiency (fig 5). The electrocardiogram showed auricular fibrillation and extreme right axis deviation. Further the pulse tracing showed a positive venous pulse. The patient, who was up and about, was unable to do more than a slight amount of work but was capable of accomplishing the moderately strenuous test ($\frac{1}{100}$) and then showed an extremely high oxygen debt of 190 per cent as against the normal, which, as will be recalled amounts to a maximum of 75 per cent.

With typical cases of aortic and mitral defects presenting practically normal sized hearts but at the same time without grave electrocardiographic alterations and in which no signs of heart insufficiency are revealed by physical examination, one finds in many instances a normal oxygen debt, even with the most strenuous test

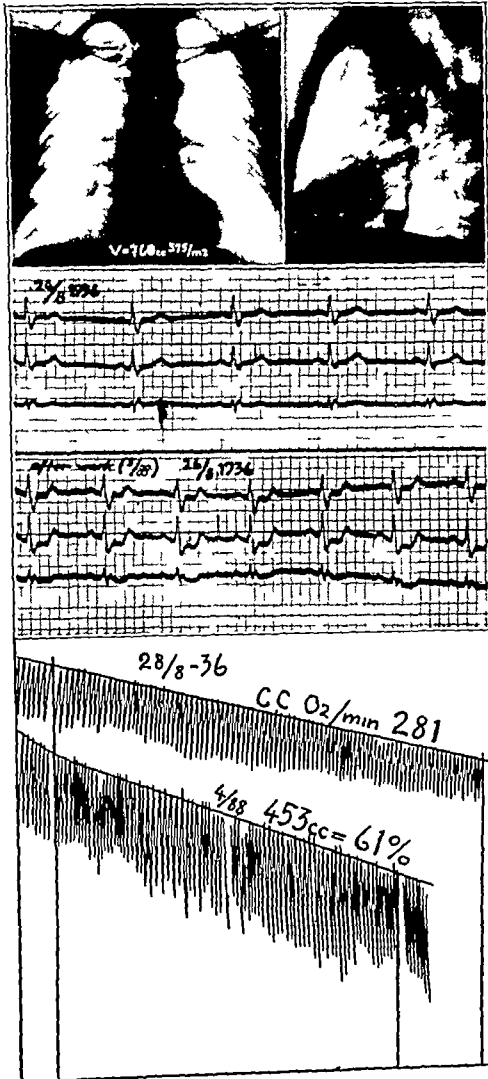


Fig 6—Angina pectoris in a stoker aged 45. The roentgenogram shows a normal size heart. The electrocardiogram is normal when the subject is resting but shows bundle branch block after work. The function test shows considerable oxygen debt with very light work.

For example, a man aged 27 has mitral stenosis with aortic and mitral insufficiency. The configuration of the heart and the heart volume do not diverge considerably from the normal. The electrocardiogram is normal on the whole, and his oxygen debt on the stairs is normal both with the moderate work and with the most strenuous work.

One can also see in this case how repeated determinations with the same output of work give particularly consistent values. It may be said that to a certain extent the size of the heart determines the person's capacity for work, provided there are no coronary alterations. Figure 6 illustrates a case in which the size of the heart was normal in a man, aged 45, whose general condition was excellent and in whom there were no signs of heart insufficiency but whose morbid picture was predominated by precordial pains on exertion and angina pectoris on exertion. The patient during rest

exhibited on the whole a normal electrocardiogram. On the other hand, after light work he showed bundle branch block and a very appreciable oxygen debt of double the normal, namely 61 per cent, with the very lowest output of work which he performed with difficulty. He was up and about the ward and suddenly fell dead three or four days later. The postmortem examination revealed an extreme sclerosis and stenosis in the anterior coronary artery. A similar case is that of a man, aged 41, who had suffered from "angine d'effort" for a year and a half. All clinical signs of cardiac insufficiency were lacking and the heart volume was normal. The electrocardiogram during rest was normal but the work electrocardiogram showed obvious signs of coronary insufficiency, and his relative oxygen debt was obviously pathologic with moderate exertion.

Within the field of pulmonary diseases also this test has its application. In certain cases of severe pulmonary alterations with great restriction of the respiratory parenchyma—for instance in cases of tuberculous pleuritis or pneumothorax—high relative oxygen debts are observed. Figure 7 demonstrates a case of fairly severe silicosis in both lungs as revealed by the roentgenogram of a man, aged 43, with a normal

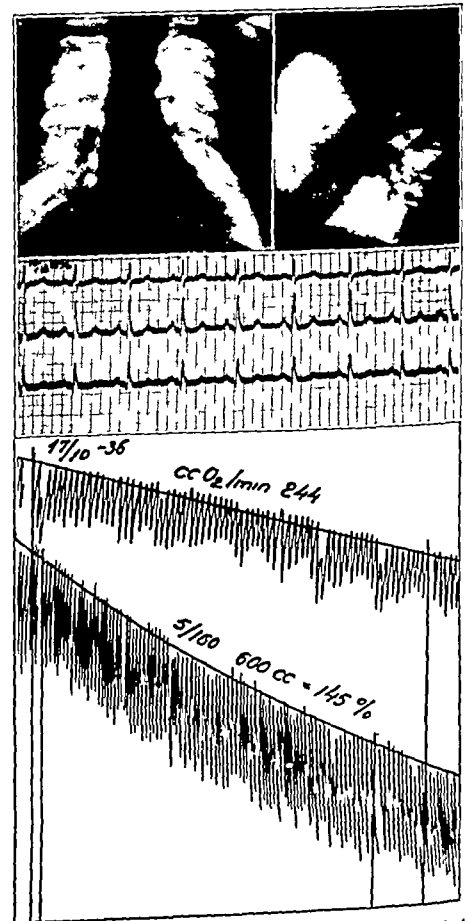


Fig 7—Silicosis in a old cast metal goods grinder, aged 43. The roentgenogram shows severe silicosis in both lungs. The electrocardiogram is normal. The function test shows severe oxygen debt with mild work.

electrocardiogram but with a relative oxygen debt which even with moderate exertion amounted to double the normal value. In individual cases, especially in young persons, they can get on fairly well even with heavy work with only one lung, as illustrated by a man aged 21, who while doing his military service got spont

taneous pneumothorax which, strangely enough, was not diagnosed until a year later when he, a skilful ski runner, thought that he could not run as well as previously. His function test even with very strenuous work, showed an oxygen debt of only 69 per cent, and this was fully normal.

Jacobæus and I⁵ have experimentally restricted the mobility of the thorax on healthy persons by means of a girdle and have shown that if the vital capacity is decreased by from 40 to 50 per cent the oxygen debt increases correspondingly with heavy work, so that

restricted to about half by means of the girdle, he is able nevertheless to perform the heaviest work on the stairs without any alteration in his relative oxygen debt. I have not been able to attain this result on any other healthy person. In one of my patients, a woman aged 58, the lung ventilation was restricted by a large ovarian cyst, one which contained 25 liters of fluid, and the oxygen debt was more than double the normal, even with slight exertion, but some days later, after the cyst had been tapped, the diaphragm had sunk, as the roentgenogram shows, and she now has, practically speaking, a normal oxygen debt with the same output of work.

The relative oxygen debt is not determined by the heart and lungs only. For instance there is the case of pernicious anemia with a red blood count somewhat over one million in a woman, aged 65, with dilatation of the heart, which receded when the blood values became normal (fig 8). She showed an oxygen debt as high as 131 per cent, that is to say, double the normal with the moderate output of work.

Finally, I would point out the case of pathologic obesity in a man, aged 24, who weighed 142 Kg but who had a normal sized heart, results in the pathologic values of the oxygen debt were 69 and 91 per cent respectively, even with a light and a moderate output of work. Six weeks later, when he lost 24 Kg, the corresponding values were normal (27 and 33 per cent). Twelve weeks later, when he had lost 40 Kg altogether, he was able to perform even the most strenuous test with a normal oxygen debt.

In the cardiac clinic I have received great assistance from the heart function test and the heart volume determination when estimating the reserve power of the heart within various fields of cardiology, especially when it was a matter of deciding whether men were fit for military service, in insurance cases, in advising against certain professions or perhaps to afford indications for provoked abortions.

From what I have said it will be evident that with these three modern methods—determination of the heart volume, electrocardiograms following work and determination of the so-called relative oxygen debt, according to my method—there are greater possibilities of characterizing latent insufficiency of the heart and lungs.

Royal Seraphimer Hospital

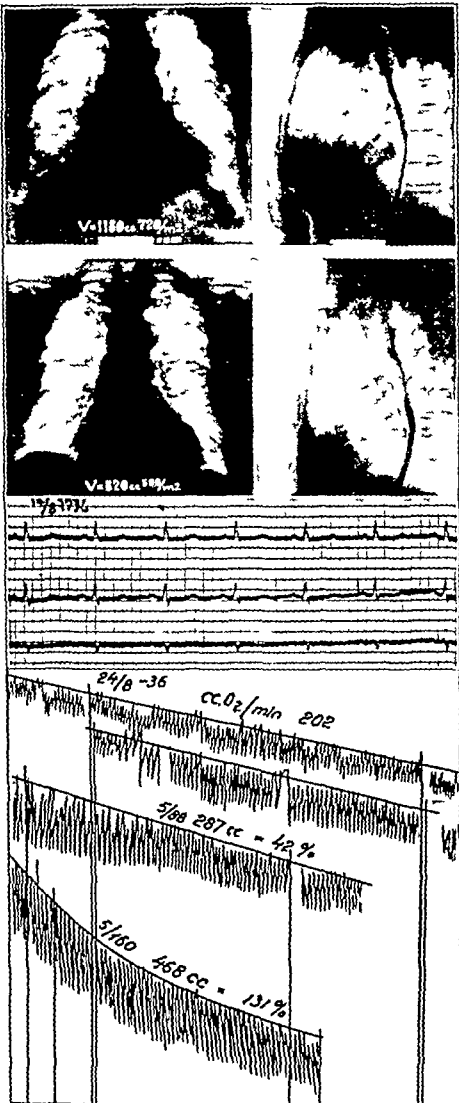


Fig 8—Pernicious anemia in a woman aged 65. The roentgenogram shows a considerably enlarged heart when the blood cells are about one million. After treatment and increase of red cells to 4 million the heart volume is normal. The electrocardiogram is normal. The function test shows considerable oxygen debt with mild work when the patient has severe anemia.

even in a healthy person there is cardiopulmonary insufficiency. If this is done with an athlete in very good training for instance Wiklund the Swedish gold medalist in the 30 mile race at the 1936 Garmisch-Partenkirchen he is found to have considerable respiratory reserves. Even during rest he has a vital capacity approaching 7 liters, when this is

⁵ Jacobæus H. C., Nylin Gustaf and Almberg B. Recherches sur l'influence d'une diminution expérimentale de la mobilité du thorax sur la dette d'oxygène après travail graduel. Acta med. Scandinav. 86: 455, 1935.

Bodily Needs and Emotions—In the case of the appetites or desires, the same difficulty is encountered as in dealing with the emotions. The bodily needs represented by hunger and thirst have been attributed, like fear and anger, to sensations arising in the viscera, hunger being due according to this view, to muscular contractions set up in the empty stomach, and thirst to feelings of dryness in the throat and mouth, to which parts the feeling is mainly attributed in consciousness. This view has not been universally accepted and probably only expresses part of the truth for it seems unlikely that needs so fundamental as those for food and drink should not have some direct influence on consciousness in order to ensure their prompt satisfaction. Indeed we see that in those who are addicted to narcotic drugs (morphine, cocaine) deprivation of the accustomed poison soon gives rise directly to painful almost unendurable cravings, and deprivation of such fundamental necessities as food and water may well do the same. Other desires seem to arise at higher cerebral levels. The desire for company for example seems to exist in all animals which are naturally gregarious and represents a social instinct, as does also desire for preeminence or for power over one's fellows while desire for knowledge seems to be allied to the intellectual faculty.—Bosanquet, W. Cecil. *Meditatio Medici*, Gale & Polden Ltd, 1937, p. 109.

PERIRENAL INSUFFLATION

WILLIAM H. MENCHER, M.D.

NEW YORK

With the increase in our knowledge of the syndromes produced by the 'hormonal' tumors, the procedure of insufflation of the perirenal space for purposes of study of both adrenal glands has become a necessary measure in making a general investigation of the endocrine system.

The procedure of perirenal insufflation was introduced by Carelli¹ in 1921 as a means of obtaining better contrast between the kidney and the surrounding tissues. Several others² immediately adopted the procedure for this purpose. However, nothing more was heard of the method until 1935 when Cahill³ reported its value in outlining the adrenals in cases in which these glands were suspected of hypertrophy or of new growth. During the past year I have had occasion to employ the method, slightly modified, in cases in which the adrenal was suspected as the cause of paroxysmal hypertension, of Cushing's syndrome or of masculinism. Several interesting features presented themselves in

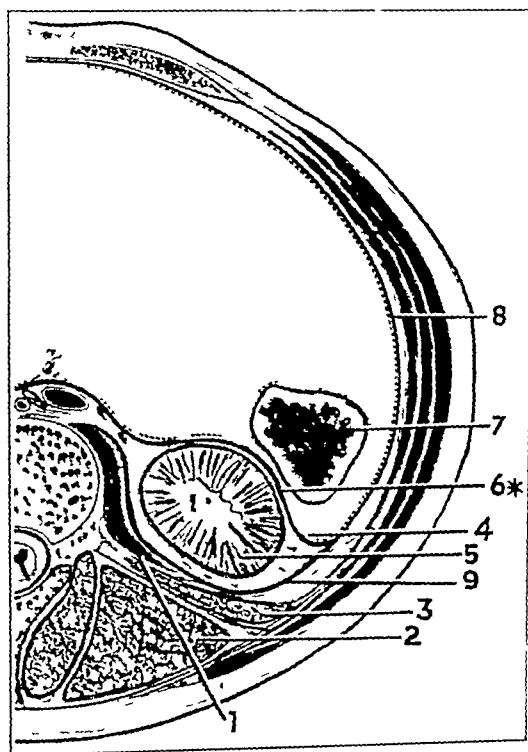


Fig. 1—Cross section through lumbar region showing relationship of perirenal (Gerota's) fascia: 1 psoas; 2 sacrolumbalis group; 3 quadratus lumborum; 4 peritoneum; 5 kidney; 6 anterior leaf of perirenal fascia; 7 colon; 8 subperitoneal fascia; 9 posterior leaf of perirenal fascia.

connection with these studies. These points will be noted in the regular perirenal air roentgenograms in the illustrations accompanying this article.

From the surgical service of the Mount Sinai Hospital. The medical and gynecologic services cooperated in the work.

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TECHNIC

The patient is placed on the side in the typical position for exposure of the kidney with two or three small sandbags under the loin so as to increase the space between the twelfth rib and the iliac crest. The patient is rotated somewhat forward so as to allow the peritoneal contents to fall away as much as possible from the

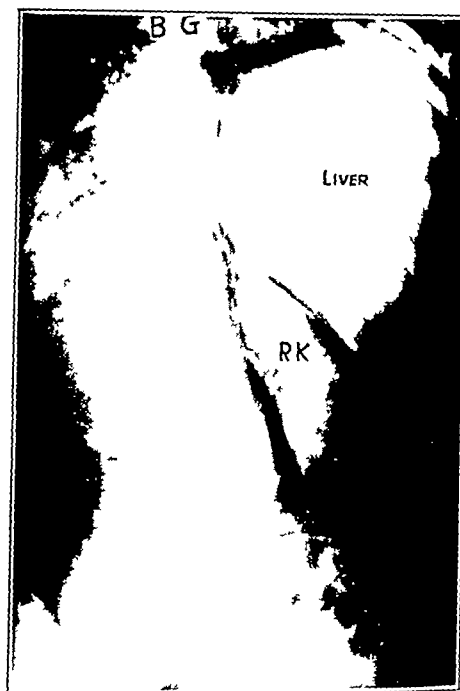


Fig. 2—Case of virilism. Insufflation of right perirenal space shown; no lesion. Other side also normal. Ovaries showed thecal cell hypertrophy.

site of injection. The twelfth rib and the outer edge of the erector spinae muscles are outlined with tincture of mercurochrome. An acute angle is thus formed by the junction of these two lines. The skin is then prepared with tincture of iodine as the skin disinfectant as for any operative procedure. The mercurochrome lines will stand out prominently under the iodine coating. A small amount of procaine hydrochloride is injected at the angle. An ordinary spinal tap needle is introduced in a direction pointing slightly upward toward the twelfth rib and somewhat forward and away from the erector spinae muscles. The needle is introduced until Gerota's fascia has been pierced. A definite sensation of perforation of this membrane is usually experienced. Aspiration at this level is made so as to be sure that the needle does not lie in a vessel. The needle is then attached to the air delivery system which consists of a two-bottle (calibrated) pneumothorax outfit and two glass attachments for washing and filtering air. Air is delivered doubly filtered through cotton and washed by 1:500 mercury bichloride solution under 6 inches of gravity pressure. If the proper plane has been entered the air will bubble freely under this small amount of head pressure. At the outset I employed from 200 to 300 cc. of air but found this amount usually insufficient for adequate x-ray contrast. Lately I have increased the volume as needed up to 550 cc. and have produced pictures with better visualization. The needle is removed after the introduction of the air and the puncture site is coated with collodion. The patient is then asked to sit up and perform rowing exercises for

about ten minutes. This measure places the air about the kidney and under the diaphragm. When flexion exercises are not feasible, manual massage over the kidney may be employed with similar results. X-ray films are then taken in the antero-posterior and in the oblique position. The plate taken in the oblique position has usually given the better visualization. Roentgenograms taken in the lateral position are of the least benefit, since the spine interferes in this plane. The two plates have usually been sufficient for diagnostic purposes. No further roentgenograms have been found necessary at later periods as recommended by Cahill. In several instances I have employed intravenous or retrograde pyelography during the time the air remained about the kidney.

In my hands the method has been devoid of any untoward effects. In some instances there is complaint of fulness in the loins. In several cases after sitting up

air outline in three of my last five cases, in which I increased the gravity pressure (fig 8). The pericardium is seen separated from the mediastinal pleura



Fig 3.—Hirsutism in a girl aged 16 years. Insufflation of the right perirenal space showed no lesion. Note air just beginning to fill left perirenal space from the insufflation on the right side.

the patient has complained of a little pain in the shoulder corresponding to the injected side. This is indicative of the presence of air extraperitoneally under the diaphragm. In one of my early cases mediastinal emphysema was noted several days later when a routine roentgenogram of the chest was taken. The patient had no subjective complaints. On examination some emphysema was palpated in the neck. This phenomenon was described by Chevassu and Maingot⁴ who used larger amounts of gas. In their case mediastinal and cervical emphysema occurred during the injection and the patient complained of a sense of suffocation. The perirenal insufflation was unsuccessful. It is quite possible that in their case, the gas was introduced directly into the mediastinum.

Since my first case of emphysema was noted I have taken immediate and late roentgenograms of the chest as a routine and have obtained a positive mediastinal



Fig 4.—Case of hirsutism showing hump on convex border of left kidney.

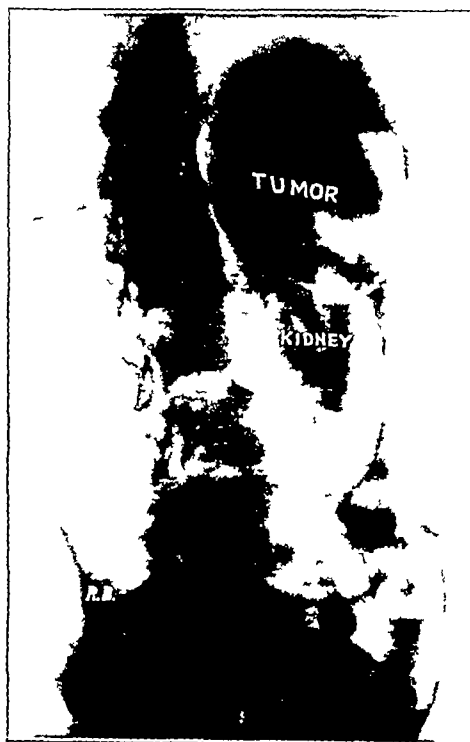


Fig 5.—Oblique view in a case of severe paroxysmal hypertension. Large adrenal tumor (pheochromocytoma). Note well defined perirenal fascial envelope (Gerota's fascia).

In one film a definite outline of the aorta is seen from the arch down to the area of the kidney. It is my idea that the pathway of air to the mediastinum is by way of the renal pedicle and thence along the aorta through

⁴ Chevassu and Maingot. A propos de l'insufflation perirénale. *J. urol. med. et chir.* 13: 54, 1922. L'inconstance des résultats fournis par l'insufflation perirénale. *ibid.* 13: 118, 1922.

the aortic opening in the diaphragm. This was partly borne out by a study of one of my x-ray plates in which the aorta is seen outlined from the region of the renal

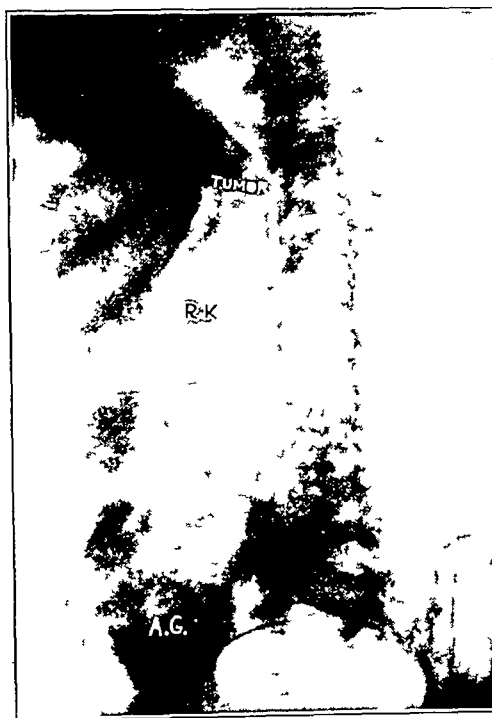


Fig 6—Oblique view in a case of Cushing's syndrome. Small tumor of adrenal (adenoma)

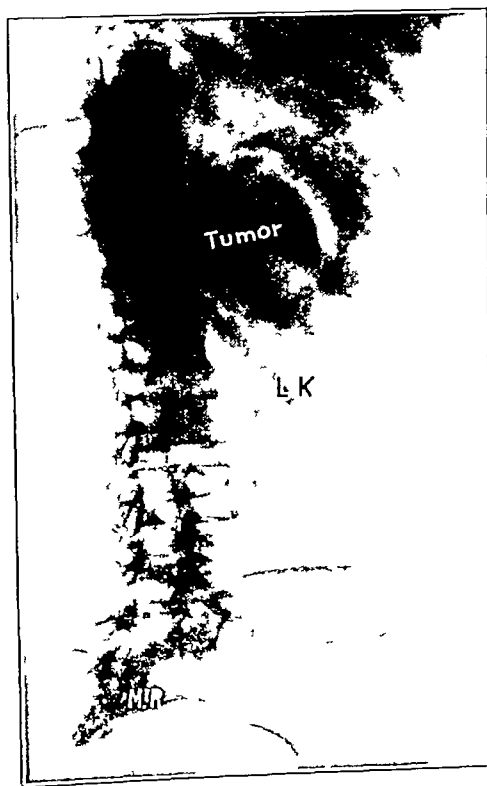


Fig 7—Oblique view in a case of Cushing's syndrome. Large adrenal tumor (adenocarcinoma)

pedicle to just above the diaphragm. In one case in which one side was insufflated, air could be seen beginning to surround the kidney on the other side (fig 3). Finally, a study of the anatomic relationships of the

perirenal or Gerota's fascia (fig 1) favors the foregoing conclusions as to the possible pathways of air. Briefly, the perirenal fascia envelops the kidney and adrenal, fusing above with the tissues in the diaphragmatic region and below with the subperitoneal tissue in the iliac fossa. Mesially, the anterior leaf of the fascia runs over the vertebral column and prevertebral vessels to join with the perirenal fascia of the opposite side. The posterior leaf fuses with the subperitoneal tissue near the spinal column. None of my cases of mediastinal emphysema had any untoward symptom. To obtain mediastinal films it is advisable to raise the gravity pressure from 18 to 24 inches after equilibrium has been established at the 6 to 8 inch gravity level.

A method is thus suggested for outlining mediastinal lesions, especially tumors, by an extrathoracic procedure that is practically devoid of danger. The method of injecting air directly into the mediastinum by the paravertebral route and through an area in which important structures are present is theoretically more hazardous. I propose to employ the perirenal method for visualization of mediastinal lesions and shall report on this phase at some future date.

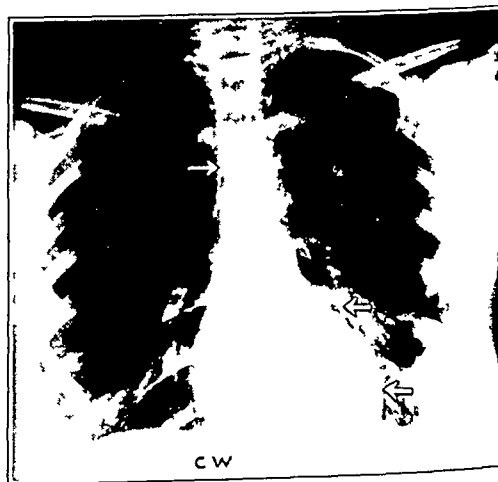


Fig 8—Mediastinum outlined after perirenal insufflation

Distinct delineation of both leaves of the diaphragm is also noted, especially in the films taken in the lateral position. Thus an extraperitoneal method is also suggested for investigating the subdiaphragmatic regions for suspected lesions by the insufflation of air. To date I have performed perirenal insufflations some twenty-two times in ten cases. In all except one case the procedure was performed in one or two sittings. In three instances the films were positive (figs 5, 6 and 7) for adrenal lesions. Operation was done in all three cases. In one (fig 5), a case of severe paroxysmal hypertension, the tumor proved to be a large pheochromocytoma.

In the second case, in which the symptoms were typical of so-called Cushing's syndrome, the tumor was an adenoma (fig 6). It was evident in this case that the diagnosis could not have been made without visualization of the perirenal space, since other types of x-ray study gave no indication of a tumor in the adrenal area.

In the third, also a case of Cushing's syndrome, the tumor was an adenocarcinoma (fig 7). (The latter two cases are to be reported by B. S. Oppenheimer and Solomon Silver.)

One case of masculinism with hirsutism proved to be negative as far as the adrenals were concerned and exploration was performed by Dr R T Frank for arrhenoblastoma of the ovary Both ovaries showed microscopically "a perifollicular and diffuse hyperplasia of the theca interna cells"

In another case of hirsutism and urinary incontinence a "bump" was seen on the convex surface of the left kidney (fig 4) In this case exploration of the left kidney will be done and of the ovaries if the former is found to be normal

The other cases showed no definite lesion in the adrenal area There is little difference except in absorption time between air, oxygen and carbon dioxide as the means of gaseous contrasts The three have been used with equally good results Carbon dioxide is absorbed most quickly, while air remains for some time (up to two weeks in one case)

17 East Ninety-Sixth Street

PARTIAL GASTRECTOMY FOR GASTRIC OR DUODENAL ULCER

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AND
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BOSTON

Subtotal gastrectomy has become a well recognized and established procedure in the surgical management of gastric and duodenal ulcer That it has become a controversial subject cannot be denied There are, on the one hand, surgeons who are highly enthusiastic for the more radical methods and on the other, those who advocate more palliative operative procedures We believe that somewhere between these two points of view, at least today, rests a satisfactory position but that partial or subtotal gastrectomy is the method of choice when limited to properly selected cases It naturally

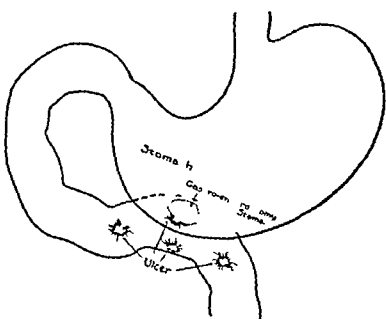


Fig 1—The common locations of gastrojejunal and jejunal ulcers following gastroenterostomy

follows and should be emphasized that it is impossible for one method to fit every patient or every type of ulcer We therefore present from the experience of the Lahey Clinic what we consider the indications for partial gastrectomy, the surgical and gastroenterologic aspects of the operation and the end results in 102 cases in which the procedure was performed for gastric or duodenal ulcer We shall also discuss briefly the surgical technic employed and the type of anesthesia we have found most useful

Two hundred and forty-two patients were operated on for gastric, duodenal or gastrojejunal ulcer in the Lahey Clinic in the ten years from Jan 1, 1927, to Dec 31 1936 This number does not include patients

with acute perforation The type of ulcer and the method of treatment for the 242 patients is shown in the accompanying table

Certain clinical features have proved to be definite indications for surgical intervention in the management of patients with duodenal ulcer It is obvious that acute perforation requires immediate surgical intervention, and this fact needs no comment Patients with intractable ulcer, who for one reason or another fail to obtain relief with adequate medical care, are forced to submit to operation for control of their disease Pyloric obstruction occurring with symptoms of active ulcer is commonly due to spasm, infection or edema, and in most instances can be relieved by rest, diet and alkalization However, recurring bouts of acute ulcer produce narrowing of the pylorus shortening of the duodenum by scar formation and real cicatricial stenosis, which necessitates surgery From a statistical study by one of us¹ of a large series of cases of duodenal ulcer, gross hemorrhage was found to indicate a somewhat more severe type of ulcer and its presence to decrease the probability of successful medical management Recurrence of gross hemorrhage in spite of adherence to a regimen for ulcer is a definite indication for surgical intervention, since the prognosis with continued medical management is poor Since gross hemorrhage is a serious complication in patients with ulcer, carrying with it a definite mortality rate of at least 5 per cent, we have established the policy of advising surgical treatment for patients with serious recurrent hemorrhage

The indications for surgical intervention in cases of gastric ulcer are somewhat different because of the different clinical features of gastric lesions in contrast to duodenal ulcer and particularly because of the diagnostic difficulty in distinguishing between some gastric

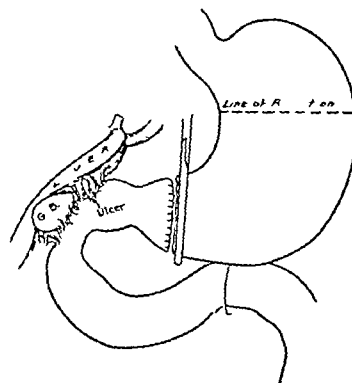


Fig 2—A densely adherent duodenal ulcer left in situ because of technical difficulties The stomach was divided in the prepyloric area and a high subtotal gastrectomy performed

Patients with Ulcer Treated Surgically at the Lahey Clinic from 1927 to 1936

	Partial Resection of Stomach	Gastro Enterotomy	Other Operative Methods	Total
Gastric ulcer	36	2	6	44
Duodenal ulcer	72	63	16	151
Gastrojejunal ulcer and malfunctioning gastro enterostomy opening	22	—	19	41
	130	71	41	242

ulcers and early carcinoma It has been definitely established and reported by Dr Sara M Jordan of this clinic that a large percentage of gastric ulcers will heal readily and completely with medical treatment Surgical treatment is therefore indicated only for the gastric ulcer which because of the large size of the

From the Lahey Clinic
Read before the Section on Surgery, General and Abdominal at the Eighty Eighth Annual Session of the American Medical Association Atlantic City N J June 9 1937

1 Kiefer F D and Jordan S M Complications of Peptic Ulcer J A M A 103 2004 (Dec 29) 1934
2 Jordan Sara M A Review of the Gastric Ulcer Problem J A M A 107 1451 1453 (Oct 31) 1936

crater or extension into adjacent tissue proves intractable with medical measures and for the ulcer which because of insufficient tendency to heal during medical management is suspected of being an early carcinoma. Recurrent massive hemorrhage is an indication for operation although it occurs less frequently from gastric ulcer than from duodenal ulcer, in 11 per cent as opposed to 18 per cent of cases. Obstruction is rarely

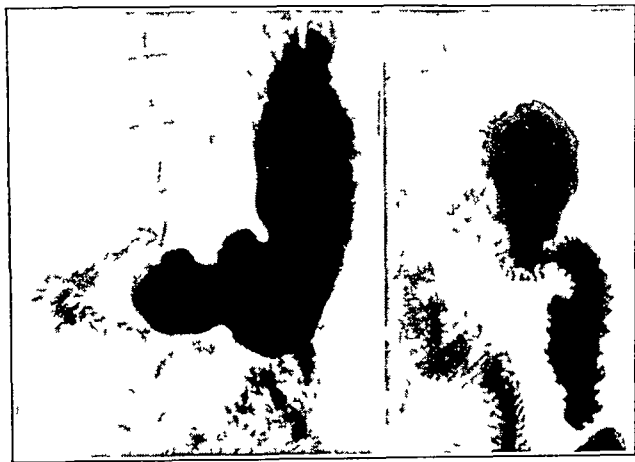


Fig 3—A man aged 26 had a history of recurrent attacks of ulcer for six years. A roentgenogram (left) of the stomach taken before operation showed hypertrophied gastric rugae, active peristalsis and a markedly deformed duodenum. A gastric analysis after an Ewald meal showed a free acid of 40 and a total acid content of 6. A roentgenogram (right) taken fourteen days after operation showed a gastric stump about one-fifth the size of the stomach with a good functioning stoma and no dilatation of the jejunum. The gastric analysis after injection of histamine showed no free acid and a total acid of 34. The convalescence was smooth and the final results were excellent.

an indication for operation in cases of benign lesions. Dr. Jordan has repeatedly shown that the most practical method of differentiation between benign and malignant gastric lesions is to employ a period of medical treatment for ulcer with repeated x-ray examinations of the stomach.

The preoperative decision pertaining to the nature of a gastric lesion is often of more value than the decision made at time of surgical exploration. As has been frequently declared by Dr. Lahey, it is often impossible at the operating table to tell whether the lesion is benign or malignant. Consequently a radical removal must be done unless preoperative data have determined the nature of the ulcer.

The selection of the type of surgical procedure is complicated by many factors and no surgeon experienced in gastric surgery will claim that partial gastrectomy should be performed in every case of ulcer. Unquestionably the less radical and more palliative types of operation must be utilized in many instances to avoid a prohibitive mortality rate. Pyloroplasty with excision of the duodenal ulcer has a limited application to the severe type of ulcer ordinarily referred to our surgical section for operation. It is not consistently applicable to large eroding ulcers of the posterior wall when the duodenum cannot be mobilized.

Gastro-enterostomy in properly selected cases promises great benefit, because of its low mortality rate and the smooth convalescence. It is our firm conviction, however, that gastro-enterostomy should be restricted to patients who are past middle age who have low acids and who have considerable cicatricial pyloric obstruction. Unquestionably the best results are obtained in this type of case. Not infrequently because of the poor

physical condition of the patient one must employ gastro-enterostomy, although recognizing at the same time that it is not the most satisfactory method for that particular lesion.

The most serious complication following gastro-enterostomy is the development of gastrojejunal or jejunal ulcer. It occurs after any operative procedure for ulcer in which the stomach is anastomosed to the jejunum and is not peculiar to gastro-enterostomy. However, it is more commonly seen after gastro-enterostomies, particularly in young persons with high gastric acids. Lahey and Swinton³ in reviewing the literature on this subject found that the reported occurrence of gastrojejunal ulcer following gastro-enterostomy ranged between 17 and 24 per cent and it is our opinion that the incidence is nearer 24 per cent than 17 per cent. Postoperative jejunal ulcer can also occur after partial gastric resection but does so with much less frequency than after gastro-enterostomy. In our series of 102 patients seventy-four of whom were followed postoperatively five or 67 per cent had postoperative ulcer. Practically all gastrojejunal ulcers are jejunal in location (fig. 1), and they may be at the very margin or at varying distances from the stoma. Jejunal ulcer is accompanied by severe symptoms usually far exceeding in intensity the distress due to duodenal ulcer and are characterized by an increased tendency to bleed by intractability to medical management and by a tendency to perforate into the abdominal cavity or into the colon thus producing a gastrojejunal colic fistula. Surgical intervention is required in a large majority of the cases and carries with it a mortality rate from four to five times that of the primary operation.

The greatest benefit accomplished by the surgical management of ulcers results from the change in the gastric secretory and motor function and there is little doubt that, of all operative procedures, partial gastrectomy best accomplishes this change. The decrease of the gastric acidity with this operation is due (1) to rapid emptying, with a decrease of the gastric secretory phase (2) to a reduction of the secretory mucosa and

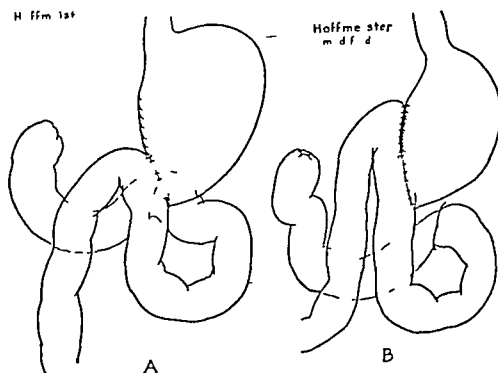


Fig 4—A the Hoffmeister type of gastrojejunal anastomosis following subtotal gastrectomy. B a modification of the Hoffmeister anastomosis reinforcing the closed end of the stomach with jejunum. This is considered the procedure of choice.

(3) to neutralization of gastric acidity by the regurgitated alkaline duodenal contents.

Partial gastrectomy is an operation of considerable magnitude beset with many technical difficulties and may be accompanied by a considerable mortality even in the hands of the most experienced and skillful sur-

geons. In our earlier cases the mortality of this operation ran prohibitively high with a rate of 18 per cent but with an increasing experience in the technical details and with a better selection of cases the mortality should certainly not be much greater than that associated with gastro-enterostomy. During the past year there have been four deaths in thirty-four cases which is a mortality of 11 per cent. This rate is undeniably high but it is frequently unfair to compare the mortality rates of two series of cases on a strictly percentage basis. Two prominent groups of factors influence the death rate for subtotal gastrectomy: first the technical factors relating to the operation and the anesthesia and second the group of factors pertaining to the general physical condition of the patient and to the pathologic picture of the ulcer including its size, depth, location and chronicity and the involvement of surrounding tissues. Ulcers situated on the anterior wall of the duodenum or near the pylorus present few technical difficulties and are comparatively easy to remove and with them the mortality should not be higher than that associated with gastro-enterostomy.

In this clinic the management of ulcer has always been placed in the hands of the gastro-enterologic division, and the policy has been a conservative one. Surgical treatment has been reserved for the patients whose ulcer has not been controlled by what we consider adequate medical management, consequently no patients with mild uncomplicated ulcers have been operated on. We do not consider medical treatment to be adequate unless the patient has had at least three weeks of hospital treatment followed by a carefully supervised maintenance regimen for an indefinite period. A recurrence of symptoms caused by careless dietary or living habits and the mere wish to avoid the so-called ulcer life have seldom been considered indications for surgical treatment.

In the last ten years of 1,930 patients with duodenal ulcer only 157, or approximately 8 per cent, have been operated on and of 192 patients with gastric ulcer only forty-four have been surgically treated. It has been our experience that ulcers which have been uncontrolled by adequate medical management are particularly severe ulcers, that is large eroding penetrating lesions of the posterior wall involving the pancreas often associated with a duodenum buried in periduodenal adhesions indurated and adherent to the liver gallbladder and common duct, or ulcers with serious associated complications such as chronic obstruction or recurrent hemorrhages. It is this type of ulcer frequently occurring in a patient with some constitutional or physical disability that our surgical staff is called on to treat. Obviously, unless operation is refused in some of these cases the surgical division comes to be filled with patients who are technically difficult to treat or poor risks.

Severe ulcer was present in sixty-six patients, or 65 per cent, of the series of 102 patients operated on and studied postoperatively. A few of the ulcers were so adherent to the pancreas and to the common duct that removal would have been accompanied by a mortality so high that the surgeon had no justification for persisting in their excision. In eighteen cases such a con-

dition existed and the division of the duodenum was made just beyond the pylorus or just proximal to it the ulcer being left in situ, after the manner proposed by Finsterer (fig 2). A high resection was then carried out in the usual manner. The ulcer which is permitted to remain is thus sidetracked from food and acid gastric juice and is bathed constantly in alkaline duodenal contents. We do not believe however that this method should be used in the presence of high grade pyloric obstruction because of the danger that accumulating secretions above the stenosis will cause the suture line of the inverted pyloric stump to give way. This serious complication occurred in one of our cases and death resulted from peritonitis.

It is important to emphasize that the purpose of any operation designed to treat peptic ulcer is to relieve the symptoms, to prevent serious complications and to guard against any recurrence. Subtotal resection more nearly meets these requirements than any other proce-

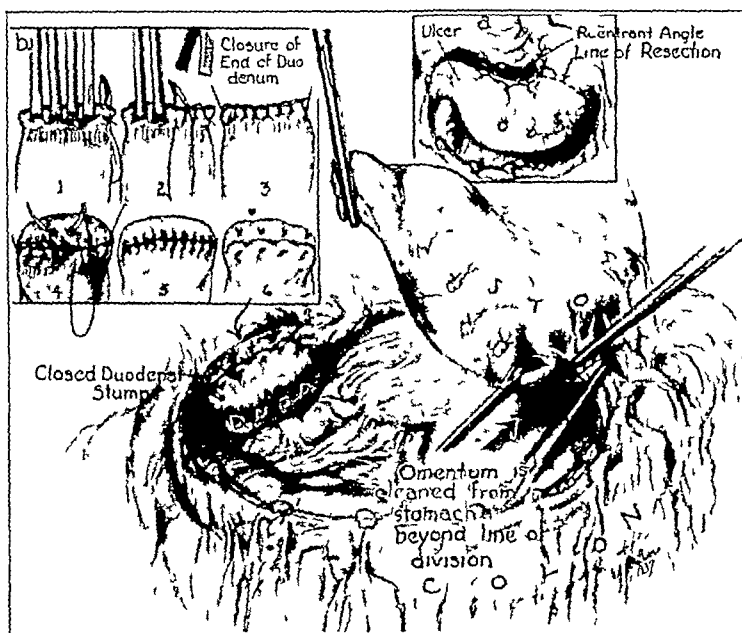


Fig 5.—The stomach is mobilized and the duodenum divided. a line of resection of the stomach. b method of closure of the duodenal stump.

cedure, and we believe that if through widened experience one can reduce the operative hazard it will prove to be the best method now available.

The importance of preoperative management and postoperative care rivals that of the surgical procedure itself. We have not space in this paper to devote to a discussion of the details of this subject but persons who are interested may refer to a discussion of the problem recently published by one of us.⁴

The technical difficulties of such a formidable operation as partial gastrectomy are considerable and are to be surmounted only by an extensive experience with gastric surgery. Once having decided on a radical attack on the ulcer one should really carry out a radical removal of the stomach. While pylorectomies and antrumectomies have a mortality rate as high as partial resection they have little advantage over a gastro-enterostomy because they fail to remove a sufficient amount of the stomach and consequently fail to decrease gastric acidity. Partial gastrectomy involves removal of at least three fourths or four fifths of the stomach.

The operation should be radical enough to produce anacidity or hypo-acidity, and a recurrence of symptoms may follow the failure to obtain this result (fig 3)

Provided resection of the stomach has been sufficiently radical, we believe that it makes little difference what type of anastomosis is made. The Billroth I type of procedure frequently cannot be used with the large adherent, eroding ulcers, which do not permit sufficient mobilization of the duodenum to make possible anastomosis of the duodenum without tension to a radically resected stomach. Many modifications of the Billroth II method can be utilized safely and satisfactorily. We have gradually come to employ a modification of the technic as proposed by Hoffmeister and have found it most satisfactory (fig 4)

The actual removal of the major portion of the stomach does not present any particularly trying technical difficulties, but painstaking precautions must be

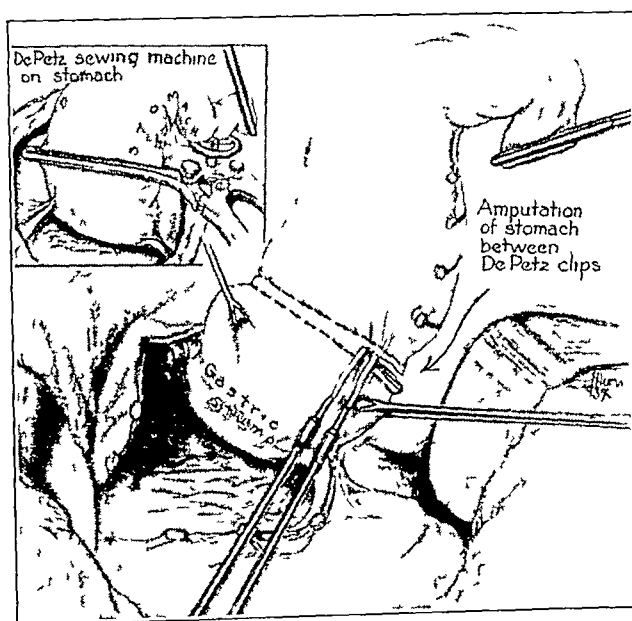


Fig 6—The stomach is divided by cautery between the double row of clips applied by the de Petz clamp. Inset shows the application of the de Petz sewing clamp

taken against contamination by spilling of the gastric contents and against hemorrhage. The real technical problem comes with the removal of large gastric ulcers which are penetrating and adherent to the pancreas and particularly with the removal of deep eroding adherent ulcers of the duodenum. The incision in the abdominal wall is made preferably to the left of the midline and of sufficient length to permit adequate exposure. Since the pylorus is normally only slightly to the right of the median line, it is easily approached by a left rectus incision, which allows a better approach to the body and lesser curvature of the stomach. Dr. Lahey has proposed and for a long time we have used a waterproof abdominal pad, consisting of gauze with cellophane stitched between the layers, to protect the edges of the wound and to wall off the rest of the abdominal cavity from contamination. Mobilization of the stomach is begun by division of the gastrocolic and the gastrohepatic omentum. One must exercise care to avoid injury to the middle colic artery which lies immediately adjacent and just posterior to the pyloric

area of the stomach. The pylorus and the ulcers of duodenum having been freed, the division is made through the duodenum just distal to or even through the ulcer. Great caution must be used to prevent injury to the common duct or to the pancreas and to leave enough of the duodenal tube to permit easy inversion and safe suture. We emphasize the importance of saving every possible bit of the duodenal tube and not wasting any of it by suturing over a clamp. This may be accomplished by opening the duodenum widely and by closing it with an in and out Connell suture of catgut or by grasping the divided duodenum with Allis clamps and closing with a continuous suture of catgut followed by inversion (fig 5). The closing is reinforced by a second catgut suture layer and finally reinforced with interrupted silk sutures. The divided ends of the omentum are then sutured to the duodenal stump for reinforcement. Frequently, when the duodenal stump is shortened and difficulty is encountered in obtaining a safe closure, it may be buttressed by suturing it against the head of the pancreas. The mobilization of the stomach is then completed by turning the stomach to the left and by dividing the left gastric artery, which is doubly ligated. The gastrocolic and the gastrohepatic portions of the omentum are further divided on each border about 4 or 5 cm above the point at which the stomach is to be cut across (fig 5).

We have found the de Petz sewing clamp, or the Fredericks modification of it, to be of great value, and we have employed it in practically all our resections. It prevents soiling, facilitates the closure, saves time, controls hemorrhage and undoubtedly reduces the technical difficulties. The resection is completed by cauterizing division between the double row of clips, which have been inserted by the de Petz clamp (fig 6). The upper portion of the resected end of the stomach is then inverted with a double row of catgut sutures and reinforced with interrupted silk sutures, a sufficient opening being left at the lower end of the closed stomach for the anastomosis. The jejunum is then brought anterior to the colon, a good sized loop (from 12 to 16 inches, or 33 to 40 cm) being allowed to remain between the Treitz ligament and the stomach, and the anastomosis to the cut end of the stomach is begun. It makes little difference whether the proximal jejunal loop is placed at the greater curvature or at the lesser curvature of the stomach. We have had good results with each method. A posterior row of interrupted silk sutures is used to unite the jejunum to the divided end of the stomach, the jejunum is then incised, and the stomach is opened by cutting away the remaining clips, all bleeding points being ligated. The posterior row is then completed with a second continuous interlocking catgut suture, this catgut suture is continued on to the anterior row as a Connell in and out suture, thus inverting all the mucosa and completing the closure of the stomach. The anterior row is further reinforced with interrupted silk sutures. The jejunum is further buttressed by silk sutures against the upper closed end of the stomach (fig 7). Particular attention is paid to the angle which are reinforced with silk sutures and by suturing the divided gastrocolic and gastrohepatic omentum onto them. With completion of the resection the abdominal cavity is inspected for bleeding points and then closed without drainage. The abdominal wound may be closed by layer sutures of catgut or by means of through and

through sutures of heavy black silk, after the peritoneum is closed with catgut. This method greatly decreases the time of closure and best prevents disruption of the wound. Immediately after the operation we regularly employ a blood transfusion and believe it is of great value, since many of the patients are of necessity in poor general condition.

The choice of a satisfactory anesthetic is of the utmost importance in gastric surgery. The technical difficulties are made immeasurably easier with complete relaxation, which permits adequate exposure without the added trauma of constant forceful retraction. Spinal anesthesia produces the most satisfactory relaxation and exposure. Of the drugs available for spinal anesthesia, nupercaine in a dilute solution as proposed by Mr. Howard Jones, with a method as modified by Dr. P. D. Woodbridge of our anesthesia department, offers the greatest possibility for prolonged anesthesia without the undesirable drop in blood pressure. Nupercaine in a 1:1500 dilution has proved so satisfactory when anesthesia of especially long duration is required that we employ it to the exclusion of all other anesthetics. Excellent relaxation is obtained by this method over periods extending up to three and four hours if necessary. Previous to the development of dilute nupercaine solution we employed intratracheal administration of cyclopropane combined with wide infiltration of the abdominal wall with 0.5 per cent procaine solution. In addition, splanchnic anesthesia was used to increase the degree of relaxation and to prevent the fall in blood pressure which so often results from traction on the stomach. We have not found splanchnic anesthesia to be necessary when spinal anesthesia with nupercaine is employed. The expert advice of a well organized anesthesia division is a most desirable feature in any type of abdominal surgery, but we know of no operative procedure in which the application of this special knowledge is of more value than in major gastric operations.

The most disturbing complications were those of a pulmonary character such as pneumonia, pulmonary edema and atelectasis, which accounted for 50 per cent of all fatalities. Hemorrhage rarely occurred. Failure to control all bleeding points at the time of operation is responsible for most cases, although sloughing of the suture line may occasionally cause hemorrhage, and twice we have seen fatalities result from this. We must admit from experience that the so-called hemostatic stitch put in the cut stomach wall does not protect all patients from postoperative bleeding, and we have for some time practiced ligation of all vessels in the divided end of the stomach.

Intra-abdominal infection accounts for a small percentage of deaths, but we believe that if soiling from spilled gastric contents were eliminated, peritonitis would be an infrequent cause of postoperative mortality. One death was due to perforation of the stoma due to the giving way of the suture line, but with the employment of silk suture material in the outer layers, this should not occur.

Intestinal obstruction following partial gastrectomy is usually caused by edema in the mesocolon and most

commonly occurs in the distal loop beyond the point of anastomosis. When gastric stasis persists beyond eight or nine days, edema is usually not the cause and the failure to drain is usually due to obstruction in the jejunum; reoperation then must frequently be carried out.

During the past two years we have employed an antecolic anastomosis, bringing a long loop up over the transverse colon and anastomosing it to the cut end of the stomach, and no postoperative obstruction has resulted, no entero-enterostomies between these loops have been done. The use of the Levine tube in all cases postoperatively, passed through the nose or the mouth, permits free drainage of any gastric or duodenal contents until normal peristalsis and drainage are resumed.

In general the period of convalescence after partial gastrectomy is extended. A few patients return to work within a period corresponding to the period of disability following cholecystectomy, but the frequent

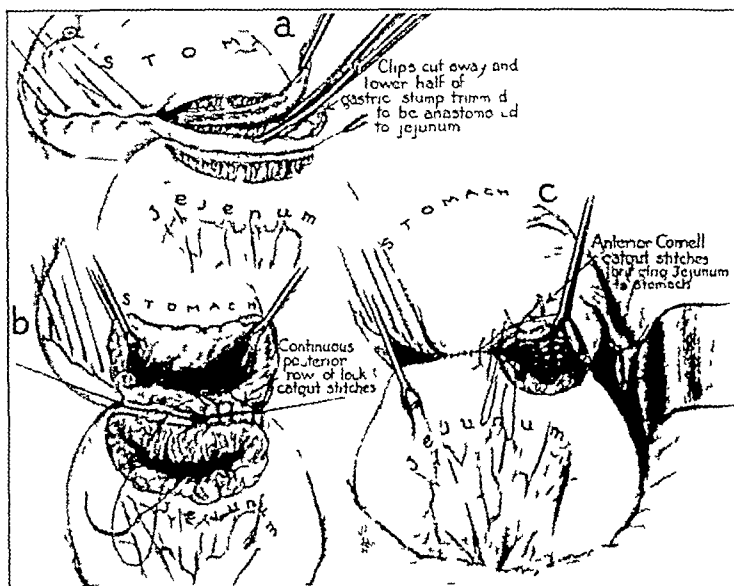


Fig. 7—Hoffmeister method of gastrojejunostomy, the upper half of the divided end of the stomach is closed inverting the clips. The jejunum is sutured to the remaining portion of the stomach. The clips are cut away in this area and the jejunum is incised forming the stoma; the anastomosis is then completed.

and more common experience is for the patient to remain unable to work for from three to six months after leaving the hospital. Not a few are disabled for as long as a year or more. The disability is usually characterized by general weakness, failure to regain normal weight, neurasthenia and some distress following ingestion of food.

The final clinical results are quite satisfactory and compare favorably with the end results of any major surgical procedure. Of the series of 102 patients on whom gastric resection was done, seventy-four were accurately followed and the results in 84 per cent can be classified as good or excellent. The patients are well, almost as robust as ever and live under few dietary restrictions. In 9 per cent the results were recorded as fair or poor. These patients have symptoms which are apparently caused largely by functional disorders of the gastro-intestinal tract or by neurasthenia.

Five patients, or 67 per cent, had postoperative ulcer, three have recovered with surgical help and are now well. One is still an invalid and the fifth has not

returned to us although it is reported that he has had three hemorrhages. It is the general experience that postoperative ulcer is associated with persistently high gastric acidity. This was true in all five of our cases. Of the eighteen patients in whom high resections were done and the duodenal ulcer allowed to remain in situ after the manner of Finsterer, fifteen have been accurately followed and fourteen have exhibited no evidence of recurrence of symptoms and are apparently in good health. One had a jejunal ulcer eleven months after operation and was treated medically, with relief of all symptoms.

The postoperative gastric acidity was studied in fifty-five patients, thirty-five, or 64 per cent, showed either achlorhydria or hypochlorhydria (a free acid less than 10) after an Ewald test meal. Twenty patients, or 31 per cent, showed free acidities of over 10, the highest acid was 52, occurring in one of the patients with postoperative ulcer. However persisting acidity does not necessarily indicate a poor clinical result, since the results in eleven of the twenty patients with a moderately high acid content were classified as excellent. It is not exactly clear why as high a percentage of achlorhydria should be produced by this operation, since much of the acid-producing mucosa is not resected. The removal of the antrum eliminates only the gastric phase of secretion and does not affect the continuous type of secretion which is apt to be high with ulcer. If the so-called continuous phase is not too active regurgitation of jejunal contents completely neutralizes the acid produced, otherwise highly acid gastric juice may enter the jejunum, so that it would seem that unless anacidity or hypo-acidity is produced by a sufficiently high resection the operation has but little clinical advantage over gastro-enterostomy.

An anastomosis which permits free regurgitation also permits rapid emptying of the stomach. It is common for patients to complain of a decreased capacity for food characterized by some sense of fullness and distress immediately after eating. This symptom ultimately disappears in most cases. There is x-ray evidence of some jejunal dilatation in many cases; this is marked in only a few. In conjunction with the decreased capacity for food many patients experience difficulty in regaining normal weight. This is an important factor in the long period of postoperative disability present in some cases. It is a common observation that the resected stomach evacuates a barium meal in much less than normal time and the intestinal absorption is undoubtedly impaired. Diarrhea is not uncommon but usually subsides within a few weeks after operation.

SUMMARY

According to our experience at the Lahey Clinic in the surgical management of duodenal and gastric ulcer, but a small percentage of patients with ulcer require surgical management.

Experienced surgeons have a wide range of opinion regarding the employment of partial gastrectomy for peptic ulcer and we believe that no one operation is applicable to all patients with ulcer. We agree with Dr. Lahey in his statement that gastro-enterostomy should not be employed as a matter of routine for duodenal ulcer, jejunal ulcer with its high operative mortality may occur following such a procedure.

Certain disturbing facts must be admitted regarding partial gastrectomy, first the operative risk which the

patient must face, second, the economic factor or period of disability, third, the changes and adjustment in gastric physiology, and fourth, the final gains in the control of the patient's disease. In any case in which the question of surgical treatment arises, it is necessary to balance these factors against risks and expectations offered by medical measures.

Postoperative mortality is plainly influenced by the choice of case as well as by technical points in the surgical procedure and the anesthesia employed. With deep eroding ulcers of the posterior duodenal wall making up the majority of cases treated by surgical procedure, the mortality will be high with radical methods but the operation unavoidable.

It is important to strive for postoperative anacidity because of the occurrence of jejunal ulcer in patient in whom the acid has not been sufficiently reduced by partial resection. Unless anacidity or hypo-acidity is produced by high resection, it is difficult to see any clinical advantage of this operation over gastro-enterostomy.

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ABSTRACT OF DISCUSSION

DR. EVERETT D. KIEFER, Boston. As stated in the paper the ultimate results are satisfactory in a large proportion of cases and it is true that the operation is often in the nature of a providential delivery from an impossible situation. It is only necessary, therefore, to point out that it is not all sunshine after a successful subtotal gastrectomy. The period of postoperative disability tends to be an extended one. In not a few cases it is from six months to a year before the patient is able to resume his work. Difficulty in regaining normal weight and vigor is often present. Apparently, the situation is related to insufficient food intake due to quick satiation of the appetite at mealtime. Certain readjustment in the mechanics of the digestive tract such as the rapid emptying of the stomach and distention of the jejunum, produce sensations that may be disturbing to the patient. The most distressing incident that may occur is the formation of a jejunal ulcer. Present reports indicate that this complication arises in about 6 per cent of cases and as time goes on the percentage is more likely to increase than decrease. There are some cases in which a highly acid gastric juice continues to be produced even though the resection is a high one. Postoperative film of two cases in my possession indicate a reasonably high resection yet gastric hyperacidity was not controlled and ulceration of the jejunum resulted. Therefore, one must conclude that although the use of subtotal gastrectomy constitutes a major advance in the surgical treatment of ulcer there is a small group of patients for whom this operation is not the final answer to their disease.

DR. RICHARD LEWISOHN, New York. I agree with Dr. Marshall and Dr. Kiefer that partial gastrectomy is not applicable to every case. I have always claimed that the mortality would go up very high if one would not select the cases properly. In my series I have excluded about 12 per cent from gastrectomy. In order to get a safe closure in the Finsterer operation the pylorus and part of the antrum must be left. Thus it follows these cases over a long period of years one may observe a fairly high percentage of gastrojejunal ulcers. In the acute perforations many surgeons in Europe do primary partial gastrectomy. In this country we do not believe in that procedure. We simply close the perforation. However I do not feel that a great many of them are really cured. In my series 40 per cent have persistent symptoms of ulcer following the closure of an acute perforation and require secondary gastrectomy. The general condition of the patient is of the greatest importance in selecting the operative procedure. I do not agree with the authors as to the long convalescence following partial gastrectomy.

trectomy In my experience at Mount Sinai Hospital, which extends over fifteen years, we have not had that experience. In fact we have been impressed by the very smooth convalescence immediately after the operation and after the patients leave the hospital. Our statistics on gastroduodenal ulcers following partial gastrectomy were published recently. We have not cured all our patients and we have not prevented recurrences, but we have reduced them from 34 to 67 per cent. If one selects the cases gastrectomy is not a formidable operation. My mortality in primary chronic cases, of gastroduodenal ulcers not including secondary cases not including the cases of acute hemorrhage, in which the mortality has been high, not including secondary operations for gastroduodenal ulcers, in which the mortality is also high is 3 per cent and that is as low as we can get it. I do not think that the last word has been spoken on the treatment of ulcer. Undoubtedly gastrectomy for ulcers is a major operation. The ultimate cure must come from the medical men, who will show us how to treat these cases properly medically and cure them permanently without surgical intervention.

DR FRANK LAHEY Boston I want to say a word based on my experience with these cases. I think it is of interest to state how my associates and I determine what type of operations we do. The most important thing particularly with duodenal ulcers is the demonstration of the relation of the location of the ulcer to the point where the common duct enters the duodenum as the authors have stated. That is the first thing we do, we find where the common duct enters the duodenum and how close the ulcer is to it. There is nothing more distressing than to remove these ulcers well down on the posterior wall of the duodenum close to the papilla and then find that one does not have enough duodenum to close the opened duodenum safely. First establish the relation of the common duct to the ulcer. Next establish the patency of the pylorus. If the ulcer is too close to the entrance of the common duct the ulcer should be left behind as suggested by Finsterer, the duodenum cut off next to the pylorus and its end turned in and a high subtotal gastrectomy should be done on the remaining stomach. It is even worth while in many cases to cut the stomach off proximal to the pylorus, leaving the entire duodenum with its contained low and duodenal ulcer together with the pylorus. It is of great importance in such cases to be sure that the pylorus is patent. If the pylorus is not patent, the only operative procedure possible is a gastroenterostomy. I once left a duodenal ulcer in place cut the stomach off just proximal to the pylorus and turned it in when the pylorus was not adequately patent. This resulted in a blow out of the turned in stomach owing to the accumulated secretion, which did not drain into the pylorus. The two very important decisions to make in the selection of the type of operation to be employed, particularly in duodenal ulcer are the relation of the ulcer to the common duct and the patency of the pylorus. I agree that the last word has as yet not been said regarding either the medical or the surgical treatment of peptic ulcer.

DR SAMUEL F MARSHALL Boston Dr Kiefer rightly cautions us against overenthusiasm for this method, and it must be applied to cases selected with a great deal of care. The cases which we have selected and to which we have applied this operation, have been severe cases and we believe that the operation has been unavoidable. Dr Lewishohn has pointed out the mortality rate. We agree that it is high but we have included the fatalities that have resulted following subtotal resection for gastroduodenal ulcers and also following operations for gastroduodenal fistula. Dr Lahey has brought to our attention the problem of pyloric obstruction where we are doing these Finsterer procedures. I do believe however that Dr Kiefer was not talking about the immediate postoperative results because these patients have a smooth convalescence. The majority of patients have a convalescence immediately after operation that is comparable to that following appendix operations. It is really amazing how well they get along but we must emphasize that it is perfectly true that the late convalescence is not always the most desirable.

PULMONARY EMBOLISM

ARLIE R BARNES MD

ROCHESTER MINN

An operation in which the patient has weathered all other hazards, a fracture that is healing satisfactorily, a puerperium in which all appears to go well, a thrombophlebitis in which the patient is well on the way to recovery or a minor sprain or bruise may be the setting for death from pulmonary embolism. The great tragedy of such a death is that in almost every such case the accident of pulmonary embolism was the sole barrier that stood between the patient and recovery. Its sudden and unpredictable occurrence comes as a terrible shock to the relatives of the patient and his physician and robs the physician of a well earned and successful result. And for every fatal attack there



Fig. 1—Fatal pulmonary embolism. A massive thrombus is coiled in the right ventricle and extends into a main division of the pulmonary artery. Minor pulmonary embolism often precedes this fatal attack.

occur two or three instances of nonfatal seizures attended by grave apprehension for the patient's life, meanwhile the physician looks on distressingly limited in his power to prevent a subsequent and possibly fatal recurrence.

Probably because of difficulty in diagnosis and an insufficient number of postmortem examinations, the vital statistics do not give a true picture of the number of people in the United States who die yearly of pulmonary embolism. Belt¹ reported that of 567 consecutive unselected postmortem examinations of adults pulmonary embolism was found to be responsible for death in 65 per cent. The ratio of medical to surgical cases in that series was forty to sixteen. Pulmonary embolism was determined to be responsible for death in 272 per cent of consecutive postmortem examinations.

From the Division of Medicine, the Mayo Clinic.
Read before the Section on Practice of Medicine at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.
¹ Belt, T. H. Thrombosis and Pulmonary Embolism. *Am. J. Path.* 10: 129-144 (Jan.) 1934.

tions in McCartney's² series of 14,419 cases, in 9,615 of which deaths were "medical" and in the remainder were postoperative, posttraumatic and post partum Collins³ reported that 2.07 per cent of deaths were found to be from pulmonary embolism in 10,940 unselected consecutive postmortem examinations performed at the Los Angeles County Hospital. By com-



Fig. 2—The heart in a fatal case of pulmonary embolism. The right ventricle and right auricle have been opened to show the marked dilatation of those chambers.

paring McCartney's and Collins' series of necropsies, it is found that 2.36 per cent of all the deaths were attributable to pulmonary embolism. Subject to whatever selectivity such series of cases represent, one can estimate that 33,748 people die from pulmonary embolism yearly in the United States.⁴ If such a percentage of deaths from pulmonary embolism is applicable to the general population and the ratio remains the same in succeeding years, it may be assumed that 3,068,000 people now living in this country will die eventually of pulmonary embolism.

ETIOLOGY

The multiplicity of hypotheses to explain the occurrence of pulmonary embolism is an indication, on the one hand, that the cause is not known and, on the other, that several causes acting in combination are a more likely explanation. Lacking a known cause, nevertheless, investigators are beginning to appreciate the importance of several factors.

In McCartney's postmortem studies, previously mentioned, pulmonary embolism accounted for 1.89 per cent of 9,615 medical deaths, for 3.32 per cent of 2,139 deaths following trauma, for 5.1 per cent of 2,381 deaths subsequent to operation, and for 5.28 per cent of 284 deaths after parturition. Henderson⁵ found that pulmonary embolism accounted for 6 per cent of all deaths following operations at the Mayo Clinic from

1917 to 1927. Barker⁶ determined that pulmonary embolism was responsible for 5.8 per cent of deaths following surgical operation at the Mayo Clinic from 1928 to 1933. Females are more likely to die from pulmonary embolism than are males. Snell's studies indicated that obesity definitely predisposes an individual to fatal pulmonary embolism.

Age is a factor of conspicuous importance in pulmonary embolism, a fact stressed by many writers. Of Barker's patients on whom necropsy was performed 93 per cent of those who died from pulmonary embolism were more than 40 years of age, 70 per cent were more than 50 and only one was less than 30 years of age. McCartney has stressed the factor of age and has expressed the belief that certain operations are followed by a high incidence of pulmonary embolism as much because of the late average age of the patients when operation is performed as because of the type of operation. Thus, he found that herniotomy, which is performed usually after the patient has passed the age of 40 years, is followed by a much higher incidence of fatal pulmonary embolism than is appendectomy, which is performed when patients are much younger, on the average. Barker found that the rate of death from pulmonary embolism was five times as high following the performance of operations for inguinal or femoral hernia as it was after operations for chronic and acute appendicitis, excluding patients with rupture of the appendix.

The type of operation has an important bearing on the incidence of fatal pulmonary embolism. As everyone knows, most instances of fatal pulmonary embolism following surgical procedures are associated with abdominal operations. In Barker's series, resection of the stomach, exploratory laparotomy for inoperable malignancy, colostomy, enterostomy, repair of femoral or



Fig. 3—*a* early stage of pulmonary embolism involving the left lower lobe increased hilus shadow on the left due to dilated vessels; dullness at left base four days later increased dullness at left base due to infarction and secondary pleural effusion; persistence of increased hilus shadow. Necropsy showed an embolus in the left pulmonary artery with infarction of the left lower lobe and left pleural effusion.

inguinal hernia, resection of the intestine, hysterectomy, operations for ruptured appendix, operations on the prostate gland and bladder, open reduction of fractures, operations on the brain and spinal cord and cholecystectomy were accompanied by the greatest death rate from pulmonary embolism, in the order named. On the other hand, death from pulmonary

² McCartney, J. S. Personal communication to the author.
³ Collins, D. C. Pulmonary Embolism. Based upon a Study of 271 Instances. *Am. J. Surg.* 33: 210-219 (Aug.) 1936.
⁴ This estimation is based on a crude death rate of 11 per thousand and an estimated population of 130,000,000 in the United States at this time.
⁵ Henderson, E. F. Fatal Pulmonary Embolism. A Statistical Review. *Arch. Surg.* 15: 231-236 (Aug.) 1927.

⁶ Barker, N. W. Personal communication to the author.
⁷ Snell, A. M. The Relation of Obesity to Fatal Postoperative Pulmonary Embolism. *Arch. Surg.* 15: 237-244 (Aug.) 1927.

embolism following thyroidectomy is almost never encountered, in spite of many instances of severe cardiac damage found in examination of the patients. Of Barker's patients who died of pulmonary embolism, 42 per cent had some form of malignancy, this percentage is out of all proportion to the number of patients with malignancy of the total number who underwent operation.

Cardiac disease is an outstanding predisposing factor to pulmonary embolism. Thus, Belt found that of eighty-three patients who had congestive heart failure thirty-six had venous thrombosis and twenty-five had pulmonary embolism, to fifteen of the twenty-five, the embolism was fatal. McCartney found that fatal pulmonary embolism was practically twice as common among patients who had heart disease as it was among patients whose hearts were not damaged. He observed, further, that the presence of heart disease tended to displace the deaths from pulmonary embolism into the earlier decades of life.

For a long time it has been believed that a crucial defect in the circulation, relating to formation of thrombi and resultant pulmonary embolism consists of a reduced rate of venous blood flow, particularly in the legs. Normal venous circulation is maintained by the *vis a tergo* of the systemic arterial circulation, which depends on the maintenance of adequate systemic blood pressure, by contraction of the skeletal muscles, which presupposes activity of the muscles, by negative intrathoracic pressure, which results from normal respiration, and by the plunger-like action of the liver secondary to respiratory movements, tending to squeeze the blood out of the intra-abdominal venous channels. All these mechanisms are likely to be disturbed following operations on the abdomen. The blood pressure is prone to fall after operation, especially if the heart is damaged, movements of the legs are reduced and respiration is likely to be shallow and in consequence the excursions of the liver are diminished. Blumgart and Weiss⁸ have shown that in cardiac insufficiency the circulation time is prolonged, that the velocity of the venous return is reduced and that the veins of the lower extremities are the first to suffer when the circulation lags. Smith and Allen⁹ found that the velocity of the venous return is reduced in 40 per cent of cases following surgical operation. A rise in the platelet count following operation, coincident with the period of anticipated embolism, has been demonstrated¹⁰ but this occurs in young and old alike. Cohnheim¹¹ and Ribbert¹² pointed out that injury to the lining of a

blood vessel favors, if it is not essential to, the localization and development of a thrombus. Dawbarn and his associates have considered that the factors of stasis and high platelet counts, acting in combination, may lead to thrombosis. Correction of the circulatory defect would seem to be the easiest way in which to break this chain of circumstances.

The situation of the thrombi which give rise to pulmonary embolism is well established. Henderson found the commonest sites, in order of frequency, to be the iliac vein, the femoral vein, the pelvic veins, the prostatic venous plexus, the vena cava and the right auricle.

Although pulmonary embolism is seen in cases of thrombophlebitis, there is little evidence that the pulmonary embolism arises from the thrombus of the thrombophlebitis. Of 116 cases of fatal pulmonary embolism, Barker found that clinical evidence of femoral or iliac thrombophlebitis was present in only five. In each of these five cases the thrombus was intact to the level of the bifurcation of the vena cava but the remains of a fresh thrombus were found in the iliac veins of the opposite leg, indicating that the embolism was the result of a fresh thrombus. Belt's examination of the spontaneous and adherent thrombus revealed no significant inflammatory reaction in the wall of the vein. Barker studied the histology of fatal pulmonary emboli from the pulmonary artery in thirty cases and found evidence of organization in only two, in these it was slight and was confined to a very small part of the margin.

Even a brief experience teaches that the fatal pulmonary embolism is commonly preceded by one or more milder attacks. There was a definite clinical history of nonfatal attacks in more than a third of Barker's cases. Belt's observations led him to conclude that, as a rule, pulmonary embolism is not a single, but a recurrent, event with repeated migration of a blood clot over a period of hours or days leading up to a fatal termination (fig. 1). Recognition of these milder attacks is sometimes difficult, but it is of the utmost importance if the patient is to be given every safeguard in an attempt to prevent subsequent fatal pulmonary embolism.

DIAGNOSIS

One is accustomed to think that the cardinal signs of pulmonary embolism are cyanosis and dyspnea. It is necessary to avoid obsession with this conception and to regard, as a common picture of acute pulmonary embolism, shock, with or without dyspnea, with faintness, pallor, sweating, acceleration of the pulse, a marked fall in blood pressure, vomiting and sometimes collapse. If such seizures are more commonly interpreted as signs of pulmonary embolism, nonfatal attacks will be recognized and the clinical diagnoses of pulmonary embolism will approximate more closely the frequency with which these accidents are discovered at necropsy.

Not only may the classic symptoms of pulmonary embolism be lacking but the triad of diagnostic observations, that is, bloody sputum, pleural friction rub and signs of pulmonary consolidation, may not be present for twenty-four hours after the onset and in some cases they never are present. Belt has indicated that pulmonary infarction sometimes may be absent in cases of pulmonary embolism unless there is obstruction to the return venous flow from the lung, such as may be

8 Blumgart H. L. and Weiss Soma. Studies on the Velocity of Blood Flow. II. The Velocity of Blood Flow in Normal Resting Individuals and a Critique of the Method. *J. Clin. Investigation* 4: 15-31 (April) 1927, III. The Velocity of Blood Flow and Its Relation to Other Aspects of the Circulation in Patients with Rheumatic and Syphilitic Heart Disease. *ibid* 4: 149-171 (June) 1927, IV. The Velocity of Blood Flow and Its Relation to Other Aspects of the Circulation in Patients with Arteriosclerosis and in Patients with Arterial Hypertension. *ibid* pp. 173-197, V. The Physiological and the Pathological Significance of the Velocity of Blood Flow. *ibid* pp. 199-209. Clinical Studies on the Velocity of Blood Flow. I. The Pulmonary Circulation Time. The Velocity of Venous Blood Flow to the Heart and Related Aspects of the Circulation in Patients with Cardiovascular Disease. *ibid* 5: 343-377 (Feb.) 1928, The Relation Between the Velocity of Blood Flow, the Venous Pressure and the Vital Capacity of the Lungs in Fifty Patients with Cardiovascular Disease Compared with Similar Measurements in Fifty Normal Persons. *ibid* pp. 379-392.

9 Smith L. A. and Allen E. V. Personal communication to the author.

10 Dawbarn R. I., Earlam F. and Evans W. H. The Relation of the Blood Platelets to Thrombosis After Operation and Parturition. *J. Path. & Bact.* 21: 833-873 (No. 4) 1928.

11 Cohnheim Julius. Lectures on General Pathology. London: New Sydenham Society 1: 172-189.

12 Ribbert Hugo. Ueber die Thrombose. *Deutsche med. Wchnschr.* 35: 1577-1579 (Aug. 22) 1912. Weitere Beiträge zur Thrombose. *ibid* 40: 60-62 (Jan. 3) 1914.

caused by some structural or functional defect of the mitral valve. In support of this view he cited the work of Karsner and Ash,¹³ who concluded from their experiments that true hemorrhagic infarction with necrosis is produced by blockage of the pulmonary artery by a bland thrombus only if some obstruction to the return venous flow is introduced. This may explain the lack of diagnostic pulmonary evidence in some cases of pulmonary embolism.

In case the embolism is massive but still is sublethal, White¹⁴ has called attention to cardiac phenomena which are attributable to acute dilatation of the right ventricle and pulmonary conus (fig 2). Increased pulsation may be noted in the second and third interspaces to the left of the sternum. A loud systolic murmur in this region, and marked accentuation of the second pulmonic sound may be observed. In the same area friction rub may be heard. Gallop rhythm, best heard at the left of the sternum, is present occasionally. The veins of the neck may be dilated and pulsating. Cyanosis of extreme degree may be present in severe cases.

Electrocardiographic Differences in Acute Pulmonary Embolism and in One Type of Acute Cardiac Infarction

Type of Electrocardiogram Characteristic of Acute Pulmonary Embolism	T ₂ Type of Electrocardiogram, Characteristic of Acute Infarction of the Posterior Portion of the Left Ventricle
S ₁ constantly present and usually prominent	S ₁ absent or if present not exaggerated
S T ₂ —Take off usually below zero level	R T usually elevated rarely isoelectric and never depressed
T ₂ diphasic monophasic or upright rarely inverted	T usually inverted
R T ₂ occasionally slightly elevated	R T ₂ much elevated as a rule
T ₂ inverted may be cove plane	T ₂ usually inverted
Q ₂ frequently fairly prominent	Q ₂ frequently markedly prominent
Q ₂ pattern not present	Q ₂ pattern commonly present
Q ₄ usually within normal limits	Q ₄ usually within normal limits
T ₄ usually upright may be flat or diphasic	T ₄ usually inverted

Roentgenologic evidence of pulmonary embolism may be lacking in the early stages. Camp¹⁵ has called attention to accentuation of the hilus shadow on the side of the occlusion (fig 3). He has expressed the belief that this is attributable to dilatation of the pulmonary vessels on that side, and if so, it should be an early sign in the anteroposterior thoracic roentgenogram.

Acute pulmonary embolism and acute coronary thrombosis may have the following symptoms in common: sudden onset, pallor and sweating, precordial pain, weakness, vomiting and collapse, marked fall in blood pressure and acceleration of the pulse, leukocytosis, and elevation of temperature. Marked cyanosis and urgent dyspnea are encountered much more frequently in cases of acute pulmonary embolism than in cases of coronary thrombosis. Pain, on the other hand, is more severe and prolonged with acute coronary occlusion and usually is projected to the sternal region. The pain of pulmonary embolism usually is felt in the lateral regions of the thorax and may be made worse

by inspiration. A previous history of angina pectoris should influence one to think first of the possibility of coronary occlusion.

White, and McGinn and White¹⁶ pointed out that certain electrocardiographic changes were indicative of acute pulmonary embolism. I¹⁷ made similar observations independently, which corroborate White's results, and I have found these electrocardiographic changes of great importance in the diagnosis of pulmonary embolism and especially in its differentiation from acute coronary occlusion. In the accompanying table are recorded the characteristics of the electrocardiogram in pulmonary embolism and in recent acute infarction of the posterior basal portion of the left ventricle, with which pulmonary embolism is most likely to be confused.

Although the records of many patients who had pulmonary embolism, verified at necropsy, might be submitted, the two following cases, in which the diagnosis seemed well established on clinical grounds, illustrate important clinical and diagnostic features.

CASE 1—A man, aged 47, was admitted to the hospital Aug. 20, 1935, with a history of having had thrombophlebitis of the right leg in 1930 and recurrence of this condition six weeks prior to this admission. There were pain, redness and swelling of the right leg. The blood pressure was 130 mm. of mercury systolic and 80 mm. of mercury diastolic. The electrocardiogram was normal two days after admission. August 31 he felt as if he were going to faint on going to the bathroom and had to be helped back into bed. September 3 on attempting to use the bedpan, he became very faint, there was a sense of oppression in the chest, and he was nauseated, pale and sweating. The heart tones were distant, the pulse rate was 160 per minute and the blood pressure was 86 systolic and 62 diastolic. He was not cyanotic. The clinician in charge considered that he had had acute coronary thrombosis. The electrocardiogram, September 4, was not indicative of coronary thrombosis but strongly indicated that the accident had been one of pulmonary embolism. Roentgenograms of the thorax were negative September 5, 7 and 16. Except for a suggestion of bronchial breathing at the base of the left lung, and some increased transmission of whispered sounds over that area there were no diagnostic signs referable to the thorax. The patient had no further seizures and was discharged in good condition September 21.

Noteworthy features in this case were (1) a mild premonitory attack which was unrecognized, (2) marked symptoms of shock without cyanosis or appreciable thoracic pain, (3) paucity of manifestations on physical examination of the thorax, and (4) diagnostic electrocardiographic signs.

CASE 2—A woman, aged 48, underwent an operation for repair of a diaphragmatic hernia Sept. 18, 1935. September 20 she had a severe pain in the left anterior part of the thorax particularly worse on inspiration. The pulse rate was 104 per minute. The blood pressure fell from 120 systolic and 80 diastolic to 90 systolic and 62 diastolic. There was a suggestion of bronchial breathing at the base of the left lung on the following day. September 25 at 2:40 a. m. there was a sudden attack of dyspnea without appreciable cyanosis. October 4 the patient had pain in both shoulders, she became very weak and moderately dyspneic and she vomited. Her color was ashen but not markedly cyanotic. The apical rate was 136 beats per minute. The blood pressure fell from 110 systolic and 80 diastolic to 90 systolic and 62 diastolic. Repeated thoracic examinations never revealed evidence of pulmonary consolidation. T₁—

13 Karsner H. T. and Ash J. E. Studies in Infarction II. Experimental Bland Infarction of the Lung. *J. M. Res.* 27: 205-224 (Nov.) 1912.

14 White P. D. The Acute Cor Pulmonale. *Ann. Int. Med.* 9: 115-122 (Aug.) 1935.

15 Camp J. D. Personal communication to the author.

16 McGinn Sylvester and White P. D. Acute Cor Pulmonale Resulting from Pulmonary Embolism. Its Clinical Recognition. *J. A. M. A.* 104: 1473-1480 (April 27) 1935.

17 Barnes A. R. Diagnostic Electrocardiographic Changes Occurring Following Acute Pulmonary Embolism. *Proc. Staff Meet. Mayo Clin.* 11: 11-13 (Jan. 2) 1936.

patient received oxygen continuously from September 18 to 27 and from October 4 to 16. After an alarming and stormy convalescence, she was dismissed November 5 in satisfactory condition. The electrocardiographic changes are shown in figure 4.

Noteworthy features in case 2 were (1) two mild premonitory attacks, (2) attacks characterized by a picture of shock rather than by marked dyspnea and cyanosis, (3) absence of diagnostic signs on repeated thoracic examinations, (4) importance of electrocardiographic appearances in the diagnosis, and (5) probable life preserving effect of oxygen therapy.

MECHANISM OF DEATH

A word must be said concerning the mechanism by which pulmonary embolism causes death. There are many objections to explaining it on the basis of arterial obliteration and insufficiency of the pulmonary circulation. These are that in some cases there has been time to remove the clot from the pulmonary artery by the Trendelenburg operation, that in pulmonary surgery it is possible to ligate one or all the branches of the pulmonary artery on one side, and that correlation between the size of the embolus and its fatal issue is lacking. Villaret, Justin-Besançon and Bardin¹⁸ produced pulmonary embolism experimentally. They found that section of the vagus nerves of the rabbit increased by sevenfold the quantity of embolic particles necessary to produce sudden death. Conversely, section of the cervical sympathetic trunks diminished by fourfold the quantity of embolic particles that was required to produce sudden death. Administration of atropine sulfate and ephedrine hydrochloride in conjunction delayed the occurrence of sudden death perceptibly. If, in addition, the animal was alkalinized by administration of sodium bicarbonate, it survived an otherwise fatal dose of embolic particles from an hour to several days. The injection of hydrochloric acid rendered the animal more susceptible to sudden death from a given amount of embolic particles. The investigators concluded that sudden death could be the result only of a reflex sympathetic inhibition and that such humoral factors as alkalinity or acidity may play an important role. This hypothesis of sympathetic inhibition appears to receive some support from, and at the same time accounts for, the clinical phenomena of shock seen so frequently in attacks of pulmonary embolism.

Gosset, Bertrand and Patel¹⁹ submitted evidence that the embolus is fixed in the pulmonary vessel by its spasm. There is evidence that in embolic occlusion of an artery elsewhere in the body the complete occlusion is often the result of arterial spasm²⁰ rather than of the actual size of the thrombus. Is it not possible, if sympathetic reflexes are important in the production of the total chain of serious events, that reflex spasm of some or all of the pulmonary arteries at the hilus may be at least one part of the dangerous reflex mechanism? The rapid dilatation of the right ventricle would be better explained on such a basis than on the basis of occlusion of a single pulmonary vessel.

PREVENTION AND TREATMENT

In selecting a plan of preventive treatment it is necessary to choose a point of attack which, with present knowledge, seems to give the most prospect of yielding results. According to the evidence at hand, the most logical program would seem to have for its aim improvement in the rate of circulation and particularly acceleration of the return flow of blood from the lower extremities. Smith and Allen have found that in a considerable proportion of their cases there was a reduction in the velocity of venous return flow from the lower extremities after operation. They have found also that desiccated thyroid, administered orally, increased the velocity of this venous return in from forty-eight to seventy-two hours after administration was begun. Walters²¹ in 1930 reported four and a half years of experience with thyroid extract administered to 4,500 patients after operation. Based on the total number of operations performed, the incidence of fatal pulmonary embolism in Walters' cases was 0.09 per cent as compared to an incidence of 0.34 per

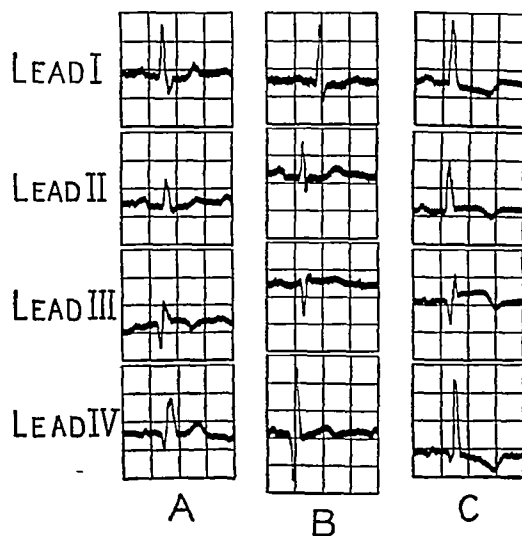


Fig 4—Electrocardiograms in case 2. A obtained October 5. B obtained in the same case one year later. C obtained in a case of acute myocardial infarction of the posterior basal portion of the left ventricle.

cent in Henderson's series in which thyroid was not employed. It is difficult to arrive at a true estimate of the value of thyroid extract as a preventive measure. However, pulmonary embolism does occur in spite of medication with thyroid, hence it is desirable to use additional measures in an attempt to combat the hazard.

For a number of years we had a certain number of deaths in the cardiac service from pulmonary embolism. From 1926 onward, Willius employed, twice daily, centripetal massage of the legs of patients hospitalized for cardiac disease. Since that measure has been in use, we have not had a single death in the cardiac service from massive pulmonary embolism.

In one surgical service²² at the Mayo Clinic during the past year the following postoperative program has been followed in every case. The patient is placed in the Trendelenburg position for the first twenty-four hours after operation. Carbon dioxide is administered

18 Villaret Maurice, Justin-Besançon L. and Bardin Pierre. *Physiopathologie des accidents mortels consécutifs aux embolies pulmonaires*. Bull et mem Soc med d hop de Paris 52: 936-941 (June 15) 1936. *Recherches sur la prevention experimentale des accidents consécutifs aux embolies pulmonaires* ibid pp 941-944.

19 Gosset A, Bertrand Ivan and Patel Jean. *Sur la physiopathologie des embolies arterielles des membres (recherches expérimentales)*. Ann d anat. path 9: 841-862 (Nov.) 1932.

20 Allen E V and MacLean A R. *Treatment of Sudden Arterial Occlusion with Papaverine Hydrochloride. Report of a Case*. Proc Staff Meet. Ann Clin 10: 216-220 (April 3) 1935. Re Takats Geza. *The Use of Papaverine in Acute Arterial Occlusions*. J A M A 106: 1003-1005 (March 21) 1936.

21 Walters Waltman. *A Method of Reducing the Incidence of Fatal Postoperative Pulmonary Embolism. Results of Its Use in Four Thousand Five Hundred Surgical Cases*. Surg Gynec & Obst 50: 154-157 (Jan) 1930.

22 Gray H A and MacKenzie W C. *Personal communication to the author*.

by inhalation several times in the day and night for the first forty-eight hours. Frequent deep breathing exercises are urged in every case. Attempts at early coughing are encouraged as much as possible. Extreme care is observed to keep the patient's legs warm at the operation, during his transfer to his room, and after his return to bed. Frequent massage of the legs is practiced during the first forty-eight hours and twice daily thereafter until the patient is out of bed. Passive and active movements of the extremities are insisted on at stated intervals from the time the patient is returned to his room and until he is out of bed. For purposes of control, thyroid extract has not been administered to these patients, although there is no reason why its administration should not be combined with this regimen. On this program no patient has died of pulmonary embolus following 750 consecutive operations, most of which were laparotomies, and while the series is too small from which to draw conclusions, the procedure will be continued and form the basis of a subsequent report.

It may be objected that such a program is too burdensome. It is quite possible that some of the details may be omitted. But if a surgeon should find that in 6 per cent of the cases in which his patients died the fault was some error in aseptic technic, would he regard any routine too burdensome to overcome it?

As a matter of fact, for all practical purposes it is possible to restrict the procedure to a selected group of cases. First of all, its use could be largely confined to patients more than 40 years of age unless the patient, whatever his age, was obese or was suspected of having some circulatory defect. Efforts should be concentrated on patients subjected to an abdominal operation, and particularly to the operative procedures shown earlier in this paper to be followed by a high incidence of fatal pulmonary embolism. Patients with a malignant growth in the abdomen who require resection of a portion of a viscus especially belong in this group. Patients who are operated on for chronic or subacute appendicitis without rupture of the appendix, those on whom thyroidectomy is performed and those whose operations are on the superficial structures of the face and neck could be omitted from the list with almost complete safety. But once a patient is found to belong in a category in which there is large likelihood of pulmonary embolism, the program should be carried out with as much care and system as are the details of the surgical procedure.

Those patients who have given a warning in the form of a mild, premonitory attack indicative of pulmonary embolism offer to the physician the possibility of his taking certain precautions and making certain preparations to prevent or combat a more serious attack. Obviously, greater care must be exercised in the time and manner of the patients' subsequent efforts at getting out of bed. A syringe containing one-half grain (0.032 Gm.) of papaverine hydrochloride for intravenous administration should be in the patient's room or ready for immediate access at some convenient point. If a Trendelenburg operation is to be considered, a sterilized surgical set should be conveniently at hand. Arrangements should be completed so that an oxygen tent could be available at a few moments' notice. In this manner, maximal preparation for a severe attack could be provided.

In case of an attack, papaverine or other antispasmodic substances should be given at once, and enough

morphine to allay pain and combat the patient's anxiety should be administered. The patient should be placed in the semiupright position and should be allowed to breathe air with a suitable concentration of oxygen. If marked distention of the veins occurs and cyanosis is marked, venesection may be indicated. If the patient survives the attack, but with evidence of cardiac embarrassment, digitalis should be administered in suitable amounts. And finally, if the situation is desperate and the surgeon is at hand, the Trendelenburg operation should be considered.

SUMMARY

Death from pulmonary embolism is a much greater menace in both medical and surgical cases than is generally realized. Although its cause is not known, some of the factors that predispose to its occurrence are known. Mild premonitory attacks frequently precede the fatal seizure and it is important that they be recognized. The picture of shock, noted as much as or more commonly than marked dyspnea and cyanosis, may constitute the clinical symptoms of pulmonary embolism. The electrocardiogram may furnish invaluable aid in the diagnosis of this condition and especially in its differential diagnosis from acute coronary thrombosis. Whatever the cause of pulmonary embolism, the most promising avenue of attack is the attempt to improve the rate of circulation and particularly the velocity of venous return from the lower extremities. A comprehensive program looking to that end should be applied, if not to all patients, then to those patients whose condition presents circumstances which are known to predispose to the occurrence of pulmonary embolism. Certain results to date encourage one to believe that if such a program were carried out with uncompromising zeal a very high percentage of deaths from pulmonary embolism could be eliminated, at least following surgical procedures, during the puerperium, and following sprains and fractures. In no aspect of surgery is there such a promising field for lowering surgical mortality. The medical profession is challenged to use at least such measures as are available in the effort to combat the tragic situation presented by pulmonary embolism.

ABSTRACT OF DISCUSSION

DR. WILLIAM J. KERR, San Francisco. One of the points emphasized is the evidence on which one may be able to make earlier and more accurate diagnoses of this condition. A few years ago it was customary to make the diagnosis only when the patient had evidence of consolidation or collapse in the lung with a friction sound and with the expectoration of thick gelatinous, hemorrhagic material. It is not necessary to wait until those signs appear before the diagnosis can be established. The incidence of this condition is high in persons past 40 years of age, particularly in the group who have some circulatory impairment, in those who are subjected to certain types of operation which require rest in bed and some shock or symptoms result from the operation itself, in those whose abdomen has been opened, or in those having operations for hernia. Just how much the disturbance in the intra-abdominal pressure has to do with this cannot be said, but as Dr. Barnes has pointed out the movements of the diaphragm are essential in promoting the normal circulation. One of the facts that have not been fully appreciated until recently is that many of these emboli which plug the pulmonary vessels are not broken off from the older process in the iliac vessels or in the femoral veins but seem to be entirely fresh embolic masses as if they were formed somewhere between the original focus and their point of lodgment, or they may perhaps have formed in the pulmonary vessels themselves. Many times the origin of the

more recent thrombus is obscure, but the premonitory signs of thrombosis in the femoral or iliac vein should put one on guard for this complication. The slowing of the blood stream by a number of means, Dr Barnes has emphasized, calls for some of the procedures which tend to promote the circulation in the abdomen and the lower extremities. The symptoms of shock which Dr Barnes mentioned, accompanied so often by cyanosis and dyspnea, are the important symptoms on which the diagnosis can be established with such accessory aids as the electrocardiogram and x-rays. Years ago Dr Paul D. White emphasized the symptoms and signs of so-called cor pulmonale, in which there was sudden distention of the right heart such as is seen in these patients. Dr Barnes mentioned in his paper, but had not time to discuss it here, one of the great problems that arise in acute plugging of one of the vessels in the pulmonary circuit. Is the whole pulmonary vascular tree constricted through reflex disturbances and does this at that time give rise to the symptoms of shock? The plan that Dr Barnes has outlined is admirable, and the treatment of the relief of symptoms of shock is one that physicians should be prepared to introduce at any time under the circumstances mentioned.

DR O. H. PERRY PEPPER, Philadelphia. Dr Barnes has opened up a subject which is not adequately taught in medical schools or adequately covered in textbooks. I read the papers of the National Board of Medical Examiners two years ago, the graduates coming from practically every school in the country, and one of the questions concerned this subject. The question was poorly answered, and those who did answer it described only the severe fatal attack of pulmonary embolism. In the textbooks there is not only an inadequate discussion of this subject but some confusion as to terminology. Dr Barnes has discussed the similarity of coronary attack and embolism of the lung. There is one other condition, rare, I will admit, but giving an almost identical picture, and that is spontaneous pneumothorax. I should like to ask Dr Barnes when he thinks the thrombus forms. We know the date of operation, we know the late date at which the embolism usually occurs. When, during that week or ten days or more, does the thrombus develop which gives the embolic attack? Associated with that is a paradoxical situation, we are between the devil and the deep blue sea in treatment. I agree with Dr Barnes about the prevention of the original thrombosis which is what his measures of treatment are directed at. We improve venous flow, we avoid thrombosis in the femoral or iliac artery or elsewhere. This is all right. But now our patient has had a mild attack of pulmonary embolism. Right away we all more or less reverse ourselves. Instead of encouraging passive movements, getting the patient up out of bed, we establish a routine of immobilization and delayed getting out of bed, which while useful for preventing breaking off of the established thrombus is the exact program that would favor the establishment of further thrombosis. If the thrombus doesn't come from the femoral thrombosis that has been recognized, but from a fresh one, it seems to me that we are in a difficult position. While I think this is an important subject, I have a suspicion that pulmonary embolism is becoming less frequent, irrespective of the measures which Dr Barnes has suggested for avoiding it. The production of thrombosis is lessened by the better condition in which surgeons are bringing their patients through operation today. Better preoperative and better postoperative care, better anesthesia, better control of fluid intake and output exist, and the patients are less likely to develop thrombosis. In our clinic at the University Hospital in Philadelphia, where we take no special care such as that which has been described, we have had no case of pulmonary embolism for over two years.

DR DAVID WARD SCANLON, Atlantic City, N. J. Dr Barnes has estimated that of the people now living in the United States 3,068,000 will die of pulmonary embolism. That figure indicates the importance of his demonstrated pulmonary embolism electrocardiographic tracings. The clinical chart in the absence of electrocardiographic studies is diagnostic. For example, in a surgical case pursuing a normal postoperative uncomplicated course an acute complication suddenly occurs. The pulse jumps to 140 or above and remains there for about forty-eight hours. The temperature is not much affected by the complication until, at about the end of forty-eight hours it

climbs to between 100.5 and 102 and the pulse drops to about 120. Temperature and pulse run along at this level for several days. I approve the prophylactic treatment against pulmonary embolism described by Dr Barnes, in spite of the large amount of additional work. I am quite sure that many of us here who have no hospital connection, and others like myself, who have only a three months service, would surprise men like Dr Barnes and Dr Pepper, who seldom leave the institution, with the things we do in private homes, with such treatment as Dr Barnes described in pulmonary embolism, and often as the only help the intelligence of the family properly instructed. I appreciated Dr Barnes's paper. I learned a great deal from my study of the paper before the discussion, and I am quite sure that if I hadn't studied it before this discussion I would be as dumb about this subject as the students Dr Pepper has handled.

DR A. R. BARNES, Rochester, Minn. I am grateful for the discriminating discussion that this paper has received. To Dr Pepper's question as to the time at which the thrombus is formed, the answer is that we do not know. Pathologists tell us that the lack of organization of an embolus indicates that it is of relatively recent development, perhaps twenty-four to forty-eight hours at the outside. Dr Pepper called attention to the advice to observe greater precautions with a patient who has given a warning in the form of a premonitory attack. I admit that the advice sounds somewhat paradoxical. It reminds me of O. Henry's story "Let Me Feel Your Pulse." O. Henry represented that he had symptoms of a nervous breakdown. He went to one of the great sanatoriums for the treatment of nervous diseases. After an elaborate neurologic examination the doctor said "What you need is absolute rest and exercise." I did not elaborate on what I meant by certain precautions which might follow a premonitory attack. By no means would I have us give up, for example, deep breathing exercises, massage of the legs, or active and passive leg motions following that event, but I would postpone the time at which the patient is allowed bathroom privileges or allowed to be up. I would use unusual care to see that the bowel movements were made as easy as possible for the patient, perhaps by giving liquid petrolatum or small enemas, because all of us are familiar with the frequency with which fatal embolism comes after straining at the stool. I think it is possible to modify the strenuousness of the effort that is made but still to maintain a certain degree of effort activity, particularly pertaining to the activities of the legs and respiratory movements. Dr Pepper has made an optimistic statement and, I hope, one based on accurate data, that pulmonary embolism in the surgical services where he works has been on the decrease in recent years. It is extremely difficult to get at the actual facts in these cases unless the situation is analyzed with extreme care. Henderson analyzed our material for a period of ten years from 1917 to 1927 inclusive, and he found that 6 per cent of all surgical deaths were the result of pulmonary embolism. This report is based on necropsy studies. Since then we have instituted one program or another and we had the impression that we were making some progress. Barker has analyzed our necropsy material for the last six years and finds that pulmonary embolism accounts for 5.8 per cent of our surgical deaths despite our efforts at prevention. In other words, there is a screw loose some place in the efforts we have made heretofore. Hence our interest in tightening up on the situation and seeing if some more systematic method will not achieve the results we desire.

Billings, Osler, Welch and Garrison.—They all profoundly affected American medicine, particularly the study of medical history. It was Garrison's task in life to take a narrower path and climb it higher than any of the others—the rocky path of the history of medicine. He traveled fast and strong explored new ground and gained new vistas. He wrote an account of his travels his "Introduction," as all good travelers do for the benefit of those who should come after him. This book led more people to explore the same mountains than any other publication before its time.—Viets, H. R. Fielding H. Garrison and His Influence on American Medicine, *Bull. Inst. Hist. Med.* 5:352 (April) 1937.

TREATMENT OF TOBACCO AMBLYOPIA
WITH VASODILATORS

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NEW YORK

In a recent article,¹ evidence was outlined for the hypothesis that tobacco amblyopia is due to a vascular spasm in the visual pathway. This etiology was suggested by A. Matland Ramsay prior to 1896 and later by Parsons, Aubaret and Sedan, Scalinci, Farnarier and others.

In 1930 Pfimlin² reported fifteen cases in which toxic amblyopia was treated with intravenous injections of sodium nitrite twice weekly for from three to eleven weeks. Eleven patients (73.3 per cent) attained vision of 6/12 or better in one or both eyes in an average time of thirty-six days, and seven patients (46.6 per cent) attained vision of 6/6 in one or both eyes in approximately the same average time. This was the first report to appear in the literature of the systematic use of vasodilators in the treatment of this disease. It was Pfimlin's impression that with abstinence alone a year would have been required to obtain similar results. Laszlo, Cordes and Harrington and I verified his results during the next four years. Cordes and Harrington³ used subcutaneous injections of sodium nitrite daily or every other day in treating six patients with toxic amblyopia without optic atrophy and with less than 20/20 vision. Five patients (83.3 per cent) attained vision of 20/30 or better in both eyes in an average time of twenty-four days, and three patients (50 per cent) attained vision of 20/20 in both eyes in an average time of ten days.

Finally, in 1935, I⁴ reported twenty-four cases of tobacco amblyopia without optic atrophy. Most of the patients received from six to ten intravenous injections of sodium nitrite (100 mg.), which were given daily when possible. Two patients were not improved, and one did not return for adequate follow-up. The remaining twenty-one (87.5 per cent) attained vision of 20/30 or better in one or both eyes in an average time of eighteen and four-tenths days, and twelve (50 per cent) attained vision of 20/20 in one or both eyes in an average time of thirty days.⁴ Five of these patients smoked during part or all of their period of treatment. The average time in which they attained vision of 20/30 or better was thirty-six days. For the sixteen patients that abstained from tobacco during treatment, the average time for the same improvement was twelve days, and ten of the patients attained this result within seven days. In addition, it was shown that daily injections were more effective than those given less frequently and that patients who had used both alcohol and tobacco improved more rapidly than those who had used only tobacco, as was demonstrated earlier by Usher.⁵

From the Herman Knapp Memorial Eye Hospital.
Read before the Section on Ophthalmology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

¹ Duggan, W. F. Vascular Basis of Tobacco Amblyopia. *Arch. Ophthalmol.* 15: 1059 (June) 1935.

² Pfimlin, R. Treatment of Alcohol Tobacco Amblyopia with Nitro-scleran. *Klin. Monatsbl. f. Augenheilk.* 85: 787 (Dec.) 1930.

³ Cordes, J. C. and Harrington, D. O. Toxic Amblyopia Due to Tobacco and Alcohol Treated with Vasodilators. Report of Eight Cases. *Arch. Ophthalmol.* 13: 435 (March) 1935.

⁴ One patient was not seen between the seventy-sixth and the 120th day. Vision was 20/25 and 20/20—on the 120th day. If this patient who took an abnormally long time to improve is omitted (since the longest time for any other patient attaining a vision of 20/20 in at least one eye was fifty-two days) the average time for eleven patients who attained a vision of 20/20 in at least one eye is twenty-one days.

⁵ Usher, C. H. and Elderton, E. W. *Ann. Eugenics* 2: 245 (Oct.) 1927.

It is difficult to find reports on series of patients treated by abstinence either alone or in conjunction with strychnine, potassium iodide or sweats to serve as a control. According to statements of Griffith, Finlay, Traquair, Fuchs, de Schweinitz and others, mild or moderate cases require at least two or three months for a cure, while severe cases may require from five to thirty months.⁶ In 1935 Carroll⁶ reported seventy-two cases in which abstinence was the essential factor in treatment. He considered a patient improved if he could read at least two more lines on the Snellen chart than were read at the first examination. Of his seventy-two patients, seven showed improvement in two months, six in four months, five in six months, seven in nine months, four in twelve months and ten in over twelve months (the average was twenty months). This gives an average time of improvement of approximately nine months in 54 per cent of the seventy-two cases. A few patients improved who did not abstain, but in general improvement seemed to be directly correlated with partial or complete abstinence.

It has been assumed that sodium nitrite administered intravenously is effective in the treatment of tobacco amblyopia because of its vasodilating action. In order to verify this assumption, I deemed it advisable to use another vasodilator in a control series of cases. For this reason I began using acetylcholine chloride in the treatment of this condition in October 1933. The chemistry and physiology of acetylcholine were briefly outlined in a recent article,⁷ so they will not be described at this time. However, it may be stated that (1) acetylcholine is the most powerful vasodilator known, (2) it is rapidly destroyed or inactivated by blood and tissues and (3) it occurs normally in the body, being liberated on stimulation of parasympathetic (cholinergic) nerves. This last fact makes it valuable for establishing a comparison with patients treated with sodium nitrite because, instead of the introduction of a foreign substance (sodium nitrite) into the body, a substance normally present in the body in minute amounts is used. If the results obtained with acetylcholine even approximately paralleled those obtained with sodium nitrite, one could reasonably conclude that vasodilatation, a condition produced by both drugs, was the factor responsible for visual improvement in both groups of cases.

A few patients treated with sodium nitrite were not improved. It is probable that in these patients thrombosis of the vessel or vessels concerned had occurred (rather than a spasm). Likewise, patients with definite optic atrophy could not be expected to show much improvement in the condition. With such patients, however, the duration of the atrophy and the size, location and density of the scotoma are important factors for prognosis.

The salient features of tobacco amblyopia have been fully discussed elsewhere.⁸ In my opinion, the most important diagnostic procedure is a carefully taken field on the tangent screen at a distance of 1 meter with small (1 and 2 or 5 mm.) white test objects to determine the characteristics of the scotoma (size, shape, slope and density). The defect for red, which is disproportionately large, is valuable chiefly in the differential diagnosis.

⁶ Carroll, F. D. Analysis of Fifty-Five Cases of Tobacco Amblyopia. *Arch. Ophthalmol.* 24: 421 (Sept.) 1935.

⁷ Duggan, W. F. Acetylcholine in the Treatment of Acute Neuritis. *Arch. Ophthalmol.* 17: 579 (April) 1937.

⁸ Duggan, W. F. and Carroll, F. D.

RESULTS OBTAINED BY OTHER WORKERS WITH
ACETYLCHOLINE

In 1931 Bonnefon⁹ reported definite and rapid visual improvement in thirteen cases of toxic amblyopia following intramuscular injections of acetylcholine. He gave no details concerning the original or final vision in his cases nor did he state the time required for improvement.

In May 1936 Villard¹⁰ informed me that two patients with toxic amblyopia had been cured in approximately three weeks with injections of acetylcholine.

In July 1936 Orr¹¹ reported four cases of tobacco amblyopia in which the patient was improved with

Orr noted that complete abstinence from tobacco was lacking in some of his cases. He also asked for a further trial of the drug by other workers.

Late in 1936 Cragg¹² reported encouraging results in five patients following acetylcholine therapy. Two of his patients also received 4 mg of physostigmine sulfate daily by mouth.

ANALYSIS OF TWENTY-TWO CASES OF TOBACCO
AMBLYOPIA WITHOUT OPTIC ATROPHY
IN PATIENTS TREATED WITH
ACETYLCHOLINE

Between October 1933 and July 1936, twenty-two patients with tobacco amblyopia without optic atrophy

TABLE 1—Data on Patients with Tobacco Amblyopia Without Optic Atrophy Treated with Acetylcholine

Case	Age Years	Duration of Loss of Sight	Tobacco Used		Alcohol Degree of Use Duration of Use	Vision Before Treatment	Fundus	Intramuscular Injections of Acetylcholine	After Treatment Began			
			Amount per Week Ounces	Years Used					Best Final Vision Attained	After Days	Injec- tions	Patient Observed
1	54	1½ mo	4-4	30	Heavy 5 yr	R 20/100 L 6/200	Temporal pallor arteries small	5 in 11 days	R 20/20 L 20/200	5	3	3 wk
2	52	½ mo	4½	20	Heavy 4 mo	R 3/200 L 3/200	Disks hyperemic veins engorged	8 in 22 days	R 20/40 L 20/60	34	8	5 wk
3	40	6 mo	10	10	None	R 20/70 L 20/30-	Arterioles con- stricted	6 in 10 days	R 20/50 L 20/20	3	3	5 mo
4	50	4 mo	3½	30	Heavy 15 yr	R 20/30 L 20/30-	Temporal pallor	4 in 4 days	R 20/20 L 20/20	4	4	3 wk
5	51	1 yr	4½	1	Slight 1 yr	R 20/50 L 20/100	Temporal pallor arteries small hemor- rhage in left fundus	6 in 6 days	R 20/30 L 20/30	2	2	1 mo
6	41	2 mo	5½	23	Heavy 23 yr	R 6/200 L 7/200	Normal	7 in 7 days	R 20/200 L 20/70	6	6	5 wk
7	51	2½ mo	3½	12	Heavy 6 yr	R 6/200 L 16/200	Temporal pallor	10 in 16 days	R 20/70 L 20/70	16	10	16 days
8	39	6 mo	9	10	Heavy 2 yr	R 20/200 L 20/70	Temporal pallor	8 in 8 days	R 20/70 L 20/50	6	6	8 mo
9	47	8 mo	4½	30	Slight 30 yr	R 20/100 L 12/200	Temporal pallor	7 in 7 days	R 20/70 L 20/100	7	7	5½ mo
10	50	6 mo	5½	35	Slight 30 yr	R 20/30 L 20/50	Temporal pallor	6 in 6 days	R 20/25 L 20/30	6	6	5 mo
11	58	3 mo	8	10	Moderate 5 yr	R 20/100 L 20/70	Normal	8 in 8 days	R 20/20 L 20/20	33	8	8 mo
12	65	3 mo	14	35	None	R 20/200 L 20/100	Normal	8 in 8 days	R 20/50 L 20/30	29	8	15 mo
13	50	1 yr	3½	35	Moderate 35 yr	R 20/70 L 20/70	Normal	8 in 8 days	R 20/25 L 20/25	31	8	1½ mo
14	74	3 mo	1¾	28	None	R 20/70 L	Temporal pallor	8 in 8 days	R 20/30	7	7	1 yr
15	51	6 mo	1	20	Heavy 10 yr	R 20/40 L 20/40-	Normal	6 in 8 days	R 20/25 L 20/20	8	6	8 days
16	36	1 mo	13	20	Heavy 20 yr	R 20/30 L 20/30	Arteries small	3 in 3 days	R 20/20 L 20/20	3	3	5 wk
17	49	?	4	30	Heavy 7 yr	R 20/70 L 20/70	Normal	9 in 9 days	R 20/30 L 20/30	10	9	1 mo
18	51	3 mo	3½	44	None	R 20/200 L cataract	Normal	9 in 9 days	Not in proved			3 mo
19	49	6 mo	6	23	Slight	R 20/70 L 20/30	Sclerosis of arteries small hemorrhage left fundus	6 in 6 days	R 20/20 L 20/20	24	6	1½ mo
20	44	2 mo	3¾	25	Heavy 7 mo	R 20/70 L 20/50	Normal	5 in 5 days	R 20/20 L 20/20	33	5	3 mo
21	44	3¾ mo	4½	20	Heavy 8 yr	R 20/70 L 20/70	Temporal pallor	13 in 33 days	R 20/25 L 20/30	29	9	1½ mo
22	70	3 mo	3½	40	Slight 10 yr	R 20/50 L 20/-0	Arteries small	6 in 6 days	R 20/40 L 20/30	6	6	6 mo

In cases 1, 2, 9, 16, 17, 20 and 21 only cigarettes were smoked.

In cases 4, 9, 12, 16 and 22 the patient did not abstain from tobacco during part or all of treatment.

acetylcholine. His results may be summarized briefly as follows:

Case 1. Vision improved from 1/60 to 6/9 in forty-four days with forty-four injections.

Case 2. Vision improved from 1/60 to 6/12 and 6/6 in thirty-five days with fourteen injections.

Case 3. Vision improved from 4/60 to 6/12 in eight days with thirty-one injections.

Case 4. Vision improved from 6/12 to 6/6 in seven days with six injections.

were treated with intramuscular injections of acetylcholine chloride¹³ at the Herman Knapp Memorial Eye Hospital (table 1). In addition, two patients with optic atrophy were treated. The vision of the first improved from 20/200 and 11/200 to 20/70 and 20/200 after four daily injections but showed no further change during the following month. The second

12. Cragg, B. H. Treatment of Tobacco Amblyopia by Acetylcholine. *Bristol M. Chir. J.* 53: 237, 1936.

13. Acetylcholine is available as the chloride in ampules of 100 mg both in solution and as a powder which is to be dissolved in 2 cc of sterile water just prior to injection. All injections were made into the deltoid muscle. No unpleasant or dangerous side actions were observed. Occasionally the patient observed that the arm on the side of the injection felt heavy and numb for a few minutes after the injection.

9. Bonnefon. *Prat. méd. franç.* 12: 65 (Feb.) 1931.

10. Villard, E. S. Personal communication to the author.

11. Orr, H. Campbell. Acetylcholine in Tobacco Amblyopia. *Brit. M. J.* 2: 69 (July 11) 1936.

received six daily injections, the vision of the left eye improved from 11/200 to 20/200, which was maintained for one month, but the vision of the right eye (20/200) was not improved.

As complete a history as possible was obtained from all patients. The consumption of tobacco was based on the amount purchased by the patient. From a few determinations it was estimated that a cigaret weighs 1 Gm, a pipeful 1.3 Gm, an ordinary cigar 7 Gm, an Italian cigar 3 Gm and a package of tobacco 50 Gm. These figures are only approximately correct. With reference to the alcohol used, the patients were classified as those using none, as slight drinkers, who took an occasional drink of beer or whisky, as moderate drinkers, who took two or three glasses of whisky or a bottle of wine daily, or as heavy drinkers, who drank at least a half-pint of whisky or gin or two bottles of wine a day.

The visions reported are with correction in all cases. Retinoscopy was done before treatment was instituted in most of the cases to determine the approximate refractive error. The importance of this step was demonstrated in the case of one person who was

noon, three appeared, one sent word that his vision was normal and nothing was heard from the rest.

The patients received as an average seven injections in nine and one-half days. Sixteen patients received daily injections, the other six received injections on every other or on every third day. A patient was not considered to be improved unless any improvement attained was maintained until later visits.

Six patients were Americans, five Irish, four Negroes, three Italians, two French, one Hungarian and one Jewish. One was a woman (case 20).

The average age of the twenty-two patients was 51.7 years, and seventeen (77.3 per cent) were between 41 and 60.

The average amount of tobacco used per week was 5½ ounces (165 Gm), and the average duration of use prior to the onset of amblyopia was nearly twenty-six years. The least total amount of tobacco used was 4½ ounces (128 Gm) per week for one year, the greatest, 14 ounces (397 Gm) per week for thirty-five years. The least amount used per week was 1 ounce (28.35 Gm), the greatest, 16 ounces (454 Gm). The shortest period of use was one year, the longest, fifty-eight years. In seven cases (1, 2, 9, 16, 17, 20 and 21) only cigarets were smoked.

The average duration of loss of sight prior to treatment (for twenty-one cases) was four and one-half months, the extremes being one month and one year.

In table 1 are included all the essential data for the twenty-two patients treated with acetylcholine. The visual results are summarized also in section A of tables 2 and 3. There is no correlation between the amount of tobacco used (or the duration of use) and the extent of visual loss, the rapidity or slowness of improvement or the appearance of the fundi. This had been noted previously by Usher,⁶ Carroll⁶ and Duggan.¹

In two cases (1 and 21) a dermatitis of the hands was present which was diagnosed as alcoholic pseudopellagra.

CASE 1—A man, aged 54, had used 4½ ounces (132 Gm) of tobacco a week for thirty years. He had also consumed a quart of gin daily for six months and at least a pint daily for several years prior to that. His vision, which was 20/100 in the right eye and 6/200 in the left eye, had been failing for six weeks. Both disks showed temporal pallor. A scotoma, larger for the left eye than for the right, was easily found with a 5 mm white test object. The only positive results of a medical examination were a history of diarrhea and the discovery that the knee jerks were elicited only on reinforcement and that there was dermatitis on the back of both hands. The medical diagnosis was alcoholic pseudopellagra.

The vision in the right eye improved to 20/20 in five days with three injections of acetylcholine, the vision in the left eye improved to 20/200 in nine days. Two more injections did not improve the vision further.

CASE 21—A Negro, aged 44, had used 4½ ounces (132 Gm) of tobacco a week for twenty years, and he admitted drinking a half-pint of whisky daily for eight years. His vision had been failing for three and one-half months. He also mentioned the fact that his appetite was poor. The vision was 20/70 in each eye, there was temporal pallor of both disks and there was a paracentral scotoma in the field of both eyes. As he had a marked tremor of the hands and some unsteadiness in gait he was examined neurologically by Dr. S. C. Burchell who stated that the tremor and difficulty in walking were of alcoholic origin and that the patient had had delirium tremens. The patient also had a dermatitis of the hands which was diagnosed as pseudopellagra at Roosevelt Hospital.

He received nine injections of acetylcholine in twenty-nine days, with improvement of vision to 20/25 and 20/30 which was maintained for two weeks more, after which he failed to return to the clinic. It is of some interest that his tremor

TABLE 2—Vision Before and After Treatment of Patients Improved By Vasodilator Therapy

Vision	A Forty One Eyes Improved with Acetylcholine			B Forty Eyes Improved with Sodium Nitrite		
	Before Treatment Eyes	After Treatment Eyes	Average Time of Improvement per Eye	Before Treatment Eyes	After Treatment Eyes	Average Time of Improvement per Eye
<20/200	8	0		8	0	
20/200	2	2	7.5 days	8	0	
20/100	5	1	21.0 days	8	0	
20/70	12	5	10.2 days	8	0	
20/50	5	4	16.3 days	3	2	9.0 days
20/40	2	2	20.0 days	1	3	7.0 days
20/30	7	9	10.7 days	4	7	11.4 days
20/25	0	6	17.7 days	0	13	24.0 days
20/20	0	12	10.8 days	0	15	27.7 days

A Twenty-two patients were treated with acetylcholine. One was not improved.

B Twenty-four patients (46 eyes) were treated with sodium nitrite. Two were not improved and one did not return for follow up.

referred to me for treatment. The vision was 10/200 in each eye, and he was a heavy smoker. Retinoscopy revealed more than four diopters of hyperopia, with hyperopic astigmatism in each eye. With the proper glasses, vision was 20/20 in each eye, and the visual fields were normal for white and colors. If the patient had been treated with acetylcholine and refraction had then been performed, he could easily have been considered as a rapidly cured patient.

Visual fields were taken on the Thomasson tangent screen at a distance of 1 meter with 1, 2 and sometimes 5 mm white test objects and a 5 or 10 mm red test object. Ten foot-candles of illumination was used. As the scotomas were typical in all cases, the changes in the fields have not been included in this report. However, the importance of this diagnostic procedure was demonstrated in two patients who were referred to me as having tobacco amblyopia. Both had bitemporal hemianopic scotomas which were obviously due to tumors in the vicinity of the optic chiasm.

Neurologic and other examinations were made when indicated, and the patients were observed as long as possible. As mentioned before,¹ such patients are uncooperative and many of them stop attending the clinic as soon as they have recovered what they consider to be adequate vision. For example, fifteen of the patients were requested to return on a stated after-

and difficulty in walking disappeared during the first eight days of treatment (seven injections were given during this time) and did not recur while he was under observation

Carroll¹⁴ recently reported nine cases of alcohol amblyopia associated with pellagra or polyneuritis in which the patient was treated with a diet high in vitamin B. All his patients used some tobacco. Some were definitely improved in vision when placed on a diet rich in vitamin B. There are apparently two types of toxic amblyopia, one due to tobacco, with or without alcohol, and the other a deficiency disease in which the vitamin B intake is lowered because of the patient's lack of desire to eat, which, in turn, is due to an excessive intake of alcohol. Carroll has discussed the latter type and its treatment so recently that further discussion is unnecessary at this time. However, it is of some interest that in the two cases just described, which apparently were of the type of amblyopia he reported, the patient was definitely and rapidly improved with vasodilator therapy.

An apparent relation between spasm and thrombosis was demonstrated in the following case.

CASE 14—A man, aged 74, was seen first on July 26, 1934, because of retinal venous thrombosis in the left eye, the vision being reduced permanently to 10/200. The vision in the right

20/20 in each eye after the third daily injection, and this improvement was maintained for the five weeks the patient was under observation. His improvement was definitely more rapid with vasodilator therapy than it had been when abstinence was the only therapy used.

Patients 4, 9, 12, 16 and 22 did not abstain completely from tobacco during treatment, in spite of which most of them showed definite and fairly rapid improvement in vision. Also, in case 22 incipient cataract was present in both eyes, which prevented the attainment of 20/20 vision. These cataracts have slowly progressed during the past nine months, so that the vision is now 20/70. There is no scotoma for red or green in either eye.

COMPARISON OF RESULTS OBTAINED WITH ACETYLCHOLINE AND WITH SODIUM NITRITE IN CASES OF TOBACCO AMBLYOPIA WITHOUT OPTIC ATROPHY

1 *Results in Patients Treated*—Of the twenty-two patients who were treated with acetylcholine, one was not improved. Sixteen (72.7 per cent) attained a final vision of 20/30 or better in at least one eye in an average time of fourteen days, and seven (31.8 per cent) attained a vision of 20/20 in at least one eye in an average time of thirteen days.¹⁵

TABLE 3—Rapidly of Visual Improvement in Patients Treated With Vasodilator Therapy

Best Final Vision Attained In	A Forty One Eyes Improved with Acetylcholine						B Forty Eyes Improved with Sodium Nitrite						C Total (81 Eyes)				
	Final Vision						Eyes	Per centage	Final Vision						Eyes	Per centage	Eyes
1-3 days	20/20 (3)	20/30	20/50				5	12.2	20/20 (3), 20/25	20/30	20/50		6	15.0	11	13.6	
4-7 days	20/20 (3)	20/25	20/30 (2)	20/40	20/50	20/70 (3), 20/200	12	29.3	20/20 (2)	20/25	20/30 (3)	20/40 (2)	8	20.0	20	24.7	
8-14 days	20/25	20/30 (3)	20/200				6	14.6	20/20 (2)	20/25 (6)	20/40		9	22.5	15	18.5	
15-21 days	20/20	20/70 (2)	20/100				4	9.7	20/20 (2)	20/25	20/30 (2)	20/50	6	15.0	10	12.3	
22-31 days	20/20 (2)	20/25 (3)	20/30 (2)	20/50 (2)			9	22.0	20/20 (2)	20/25 (2)	20/30		4	10.0	13	16.1	
32-60 days	20/20 (3)	20/30	20/40				5	12.2	20/20 (4)	20/25			5	12.5	10	12.3	
61-120 days									20/20	20/25			2	5.0	2	2.5	

eye was 20/30 at this time and during the following ten months. He was seen again on Oct 4, 1935, with the complaint of failing vision in the right eye for three months. The vision in this eye was 20/70, and there was a moderately large paracentral scotoma. The vision improved to 20/30 in seven days with seven injections of acetylcholine and this improvement was retained for more than six months. Then the vision failed rapidly to 20/200, and a large, dense cecocentral scotoma was found. Vasodilator therapy was completely ineffective this time, and optic atrophy developed.

It is probable that the second attack of amblyopia in the right eye was due to thrombosis of a vessel in the optic nerve or chiasm, whereas the first attack was due to a spasm, as demonstrated by the fact that vasodilator therapy cured the first attack but not the second.

A second attack of tobacco amblyopia has occurred in only one of my cases thus far.

CASE 16—A man aged 36, was seen in 1930 with the history of failing vision for two months. The vision was 20/30 in each eye, and there was a large scotoma for red in each eye. With abstinence from tobacco as the only therapy the vision returned to 20/20 in each eye in six weeks.

The second attack occurred in 1935 and had lasted one month when the patient was first seen. Just prior to this attack he had been in Bellevue Hospital for twelve days for delirium tremens. The vision was 20/30 in each eye and there were a large cecocentral defect for a 5 mm red test object and a tiny paracentral scotoma for a 1 mm white test object at a distance of 1 meter. The vision improved to 20/25 in each eye after the first injection of acetylcholine and to

Of twenty-four patients treated with sodium nitrite intravenously, twenty-one (87.5 per cent) attained a final vision of 20/30 or better in at least one eye in an average time of eighteen and four-tenths days, and twelve (50 per cent) attained a vision of 20/20 in at least one eye in an average time of thirty days.¹

2 *Results in Eyes Improved*—In table 2 are tabulated the visions before and after treatment of the eyes which were improved with acetylcholine injected intramuscularly and with sodium nitrite injected intravenously. In table 3 the final visions are tabulated with reference to the time required for their attainment in both groups of cases.

A *Acetylcholine* Forty-one eyes were improved. Before treatment twenty-seven eyes (65.8 per cent) had vision of 20/70 or less. After treatment twenty-seven eyes (65.8 per cent) had vision of 20/30 or better. The average time of improvement per eye (forty-one eyes) was fifteen and three-tenths days. At the end of twenty-one days, twenty-seven eyes (65.8 per cent) had attained their best final vision and sixteen eyes (39 per cent) had vision of 20/30 or better.

B *Sodium Nitrite* Forty eyes were improved. Before treatment thirty-two eyes (80 per cent) had vision of 20/70 or less. After treatment thirty-five eyes (87.5 per cent) had vision of 20/30 or better. The average time of improvement per eye (40 eyes) was twenty-one days. At the end of twenty-one days,

14 Carroll F D. Alcohol Amblyopia Pellagra Polyneuritis Arch Ophth 16: 919 (Dec) 1936

15 The time in which a vision of 20/30 or better was attained in at least one eye was used as the basis for these calculations.

twenty-nine eyes (72.5 per cent) had attained their best final vision and twenty-four eyes (60 per cent) had vision of 20/30 or better

C In the last two columns of table 3 are given the combined statistics for eighty-one eyes (out of a total of eighty-eight eyes treated) which have been improved with vasodilator therapy

SUMMARY AND CONCLUSIONS

In cases of tobacco amblyopia without optic atrophy, the visual improvement obtained with intramuscular injections of acetylcholine chloride roughly paralleled that obtained with intravenous injections of sodium nitrite

Visual improvement was more rapid in the patients treated with acetylcholine, but it was greater in the patients treated with sodium nitrite

The visions of the individual eyes were on the whole more reduced before treatment (more eyes had vision of 20/70 or less) and were on the whole better after treatment (more eyes had vision of 20/30 or better) in the patients treated with sodium nitrite than in the patients treated with acetylcholine. For this reason it would seem that intravenous injections of sodium nitrite are more effective than intramuscular injections of acetylcholine chloride in the treatment of tobacco amblyopia

This slight but definite difference in potency is probably due to the fact that sodium nitrite is destroyed, inactivated or excreted by the body less rapidly than acetylcholine, so that its vasodilating effect is active for a longer time

The conclusion seems unavoidable that either sodium nitrite or acetylcholine, administered parenterally, brings about a more rapid return of vision in cases of tobacco amblyopia without optic atrophy than has been shown to occur in comparable series of cases as a result of treatment with time honored but relatively ineffective methods or drugs. This fact should lend additional support to the hypothesis that tobacco amblyopia is due primarily to a vascular spasm in the visual pathway

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ABSTRACT OF DISCUSSION

DR LAWRENCE T. POST, St. Louis The most important question involved in Dr. Duggan's paper is whether vasodilators are valuable in the treatment of tobacco amblyopia. The author and others have previously discussed the hypothesis that this disease is due to a vascular spasm in the visual pathway and the effect of vasodilators on shortening the time of return to normal in these cases, but I think these points are still unproved. Several speculations regarding the possible value of vasodilators in treatment of tobacco amblyopia occur to me. If it is assumed that the symptoms are produced by a very prolonged constriction of the blood supply of the visual apparatus, does it necessarily follow that relief from this constriction, if obtainable, would restore normal function? In diseases involving constriction of the peripheral vascular system of the extremities, though dilatation of the vessels of the extremities can be caused by sodium nitrite or acetylcholine, this does not help the disease condition. But more fundamental than this is the lack of proof that these vasodilators do actually increase the vascular bed of the visual system. There is considerable evidence that they do not dilate the vessels of the retina. Another theoretical point against the likelihood of this therapy being very valuable in treatment of a relatively chronic or at least nonacute condition is the evanescent action of these vasodilators. At most they probably act only a few moments and in the author's cases they have been used only once a day. In a previous paper the author, in considering the action of acetylcholine, has remarked on this transitory nature of their action and he referred to the fact that the action is much prolonged in the presence of physostigmine

even in very small quantities, and one of the authors, whom he quotes, used physostigmine as a preliminary to acetylcholine. Since it is reasonable to assume that a prolongation of action is desirable, this combination might be useful. In the medical service at Washington University, acetyl beta methyl choline has been found to have a much longer action than acetylcholine and is being used in preference to the latter drug. It is suggested that, if vasodilators are proved to be valuable in tobacco amblyopia, this drug might be found advantageous. The possibility of improvement by vasodilators must be further considered, but other factors that might be important in quick recovery should be carefully sought.

DR ARTHUR M. YUDKIN, New Haven, Conn. It is not worthy that two distinct types of therapeutic measures should be offered at this meeting for the cure of the same ocular disturbance. Tobacco alcohol amblyopia has been cured by other methods. One in particular is to eliminate the consumption of alcohol and tobacco and give the patient a well balanced diet. This method does not restore vision until the patient has adhered to the regulations for many months. At the Milwaukee session of the American Medical Association in 1933 I recommended the treatment of this disease on the basis of a well balanced diet supplemented by cod liver oil, and in some instances vitamin B complex was also given. Most of the patients improved even though they consumed a moderate amount of alcohol and tobacco. When destruction of the nerve was present, it was difficult to restore vision. Frequently a constitutional disturbance, such as diabetes, delayed the healing process. The author has presented a similar observation. From experimental work, it can readily be seen why one type of symptoms appears in one group of animals and another type in still another. Dr. Cowgill and his collaborators kept one group of dogs on a minimum amount of vitamin B (G), while another group was deprived of B₂ (G) entirely. The first group developed collapse, whereas the latter group suffered eventually from an ataxia. Two quite different syndromes were observed. The picture of complete deprivation was different from that of what might be called subnutrition. That is probably why in one group beri beri appears, in another pellagra, and in still another ocular disturbance. It becomes evident that an individual suffering from a deficiency may at some time or other have different nerves involved. In dealing with man, it must not be forgotten that the intestinal tract plays a great role in the distribution of materials necessary for the upkeep of the body. The strains of modern life have produced certain nerve manifestations that have actually upset the whole gastro-intestinal mechanism, with the result that the food is not properly prepared for digestion and absorption. I recommend that the eye doctor not only treat his cases with local medication but become interested in the general health of his patient. If the ophthalmologist is confident of his medical judgment, there is no reason why he should not advise the patient concerning diet and mode of living. Excellent results may be obtained in this ocular disturbance, which, I believe, is associated with a dietary deficiency, probably of a gastro-intestinal nature, by the restriction of alcohol and tobacco, by the elimination of constitutional complications and by prescribing a sensible, well balanced diet supplemented with moderate doses of standardized brewers' yeast and properly assayed cod liver oil.

DR WALTER F. DUGGAN, New York. It has been my practice with these cases, before and during treatment, to obtain the very best vision possible. By pointing out letters on the chart, instead of 8/200 or 10/200, one often can get a vision of 20/100 or 20/70. No case was considered as improved unless any improvement that was obtained was maintained at following visits. The charts have been changed so that the patients cannot memorize them. Also, since patients have noted that after any period of physical stress their vision seems to decrease, it has been my custom to allow the patients to rest a short time before the vision is tested. Some of these patients were seen every day. With improvement in the vision there is a very definite decrease in the size of the scotoma. Often patients say their vision is improving and while the visual acuity may be the same, the scotoma will be found to be definitely smaller. An analogous case which I saw with Dr. Knapp, was one of spasm of a branch of the central retinal artery in which the spasm with a field defect, had lasted for

two months. The spasm suddenly disappeared one night, and the patient came in a few days later with a greatly improved field and visual acuity. I know that reports have appeared stating that vasodilators do not dilate the retinal vessels. In the first place, I do not think the retinal vessels are involved in tobacco amblyopia. Also, if the retinal arteries are of approximately normal size, any slight increase in diameter would not be apparent. I have seen very constricted retinal arteries dilate with this treatment. The vascular bed must be increased because, in two or three cases which I had, there was a very definite fall in blood pressure, with intravenous sodium nitrite of from 20 to 40 mm of mercury, which was maintained for several hours. Acetylcholine acts only a few minutes on the blood pressure. The pressure will drop 10 or 20 mm and then be back to normal in fifteen or twenty minutes at the most. I think the use of physostigmine before acetylcholine would help.

DR. FRANK D. CARROLL, New York. The idea of Dr. Duggan's that tobacco amblyopia is caused by a spasm of vessels supplying the optic pathway deserves critical consideration. There is some evidence that smoking constricts the peripheral vessels. A report published recently, however, indicates that there is no more peripheral vasoconstriction from smoking than there is from taking a deep inspiration of pure air. Several of my patients with toxic amblyopia who were heavy smokers have been tested by members of the Department of Pharmacology at Columbia University, and no evidence was found by an accurate plethysmograph method of any peripheral vasoconstriction. But even if smoking does tend to constrict the peripheral vessels and raise the blood pressure, this does not indicate that either the cerebral or the retinal vessels are constricted. In fact, just the reverse is apt to be true. For example, when epinephrine is given, a vasoconstriction of the peripheral vessels occurs. This causes an increased blood pressure with a resulting vasodilatation of the cerebral vessels. Lambert has shown that, in animals, epinephrine, a peripheral vasoconstrictor, tends to cause a vasodilatation of the retinal vessels because of the increase in blood pressure. If there should be a spasm, where would it be and what would be its nature? It is almost certainly not in the retina; the retinal vessels appear perfectly normal in many of these patients. The pathologic change is essentially limited to the papillomacular bundles and therefore this hypothetical spasm would have to be limited to the vessels supplying the papillomacular bundle. The chief vessel supplying the papillomacular bundle is the central retinal artery, and when there is an ordinary spasm of this vessel it can be seen with an ophthalmoscope. It does not resemble anything seen in tobacco amblyopia. Moreover, this type of amblyopia comes on gradually and disappears gradually. Spasms of the central retinal artery or its branches that are familiar come on suddenly, therefore, we are expected to assume a very special kind of spasm foreign to our present knowledge. According to this vascular theory, my patients with this disease who are heavy drinkers would have been especially immune because they were heavy drinkers and should never have developed amblyopia—but they did. Vasodilators are suggested as being beneficial. One would expect a vasoconstrictor such as epinephrine to be of more value. This would raise the blood pressure and thus dilate the cerebral and retinal vessels as well as increase the rate of blood flow through the brain. The author maintains that the speed of recovery of patients receiving vasodilators is more rapid than in patients not receiving them. This is a difficult point to prove and needs controls. An attempt has been made to use other cases reported in the literature as controls, but they are not comparable. If the author is to persist in his efforts to prove the value of these drugs, he should treat every alternate case with an equal number of injections of saline solution or even vasoconstrictors.

DR. DUGGAN. I have read most of the reports that Dr. Carroll has read concerning the vasoconstrictive effect of smoking on the peripheral vessels and am amazed at the conflicting statements. I have treated with vasodilators alone some fifty cases of tobacco amblyopia without optic atrophy. The visual improvement has been so rapid in many cases that I have been surprised. Dr. Fraich and Dr. Bracken of New York have obtained good results. I have only the improvement in vision, the patient's word and the decrease in the size of the scotoma on which to base my figures. As to where the spasm

is located, Dr. Carroll mentions that the papillomacular bundle is involved and that it is supplied by the central artery of the retina. It is, in the retina, but the central artery of the retina usually does not supply any fibers of the optic nerve posterior to the point at which it enters the optic nerve, and it certainly does not supply the papillomacular bundle in the chiasm. Behr recently mentioned that the central artery of the retina is strictly a retinal artery as soon as it enters the optic nerve. My feeling is that the arterioles which are involved are in the region of the chiasm, because of the bilateral field defects. I have seen no change, as a rule, in the retinal vessels after this treatment, but I have seen an improvement in vision and a decrease in the size of the scotoma. Tobacco amblyopia does not come on suddenly. Amblyopia does come on suddenly in retrobulbar neuritis, and I feel that this is much more analogous to a spasm of the central retinal artery than toxic amblyopia is. As to why these particular vessels are involved, I have no explanation other than that they are end arterioles. I think that Dr. Carroll's cases and my cases belong to different groups. In the nine cases that he reported in December 1936, the average age was 36. The average age which has been found by all other authors in cases of tobacco amblyopia is between 50 and 56 years. Real cases of tobacco amblyopia do not show polyneuritis or symptoms of pellagra. The cases Dr. Carroll reported do show symptoms of a deficiency disease. I think that he and I are discussing different disease entities.

COMBINED LIGATION AND INJECTION TREATMENT OF THE VARICOSED GREAT SAPHENOUS VEIN

C. HARLAN JOHNSTON, M.D.

DES MOINES, IOWA

The ligation of varicose veins is not a new practice, nor is the high ligation of the long saphenous and injection of its distal end a new practice. Both these operations have been followed by recurrences of the veins, and as a result the strides toward perfection have brought about the present technic of high ligation, dissection of all the branches at this level and their ligation and section and the injection of the distal end of the saphenous vein. The latest technic is the culmination of all past attempts.

Ligation of the saphenous has been done since the days of Hippocrates. As time progressed the site of the ligation crept gradually upward, owing to the frequent recurrences of the varicose veins by the dilatation of collateral circulation. In 1896 Moore¹ of Australia recommended that the ligation be placed above any branches, but still he actually in practice made his incision 2 inches below that level.

John Homans² of Boston in 1916 picked the saphenofemoral junction as the ideal site for ligation and strongly recommended the tying off of all branches at that level as well. In spite of this suggestion by one of our most eminent surgeons, the ligation at lower levels continued and still continues to the present time, even when injection of the distal segment is combined with the ligation treatment and in spite of the fact that more ligations in certain cases are done at the present date than ever before. It is my purpose in this paper to show that the combined ligation-injection at the saphenofemoral junction together with the careful dissecting out and severing of all branches at that level offers the most satisfactory treatment, to date, in certain

Read before the Polk County Medical Society and Des Moines Academy of Medicine, March 30, 1937.

¹ Moore, W. The Operative Treatment of Varicose Veins. *Intercol. N. J. Australia* 1: 393, 1896.

² Homans, John. The Operative Treatment of Varicose Veins and Ulcers. Based on a Classification of the Lesions. *Surg. Gynec. & Obst.* 22: 143 (Feb.) 1916.

cases and promises the most in freedom from recurrence. The severing of the branches is stressed as being one of the most important factors in this operation.

ANATOMY

The course of the great saphenous vein is known, in general by most physicians and will therefore not be dwelt on to any extent. It is also known that it communicates through several branches with the deep

system or femoral vein. Circulation normally is upward in both veins, but when the superficial great saphenous vein is varicose the blood runs downward, through the communicating veins and up the femoral. At the saphenofemoral junction, if the valves of the saphenous are incompetent it spills over and runs down again, thus establishing a vicious circle, and hence the ease of ulcer formation and the long healing time for bruises. The region is constantly

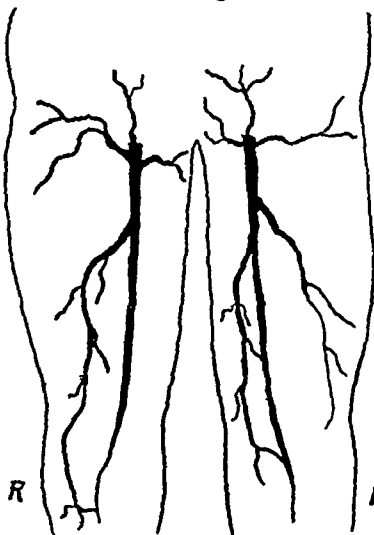


Fig 1—Collateral anastomoses shown in the right leg through the lateral superficial femoral vein and in the left leg through the medial superficial femoral vein.

bathed in poorly nourished and poorly oxygenated blood.

Injection of such a vein can easily sclerose it and render it functionless. Such injections are placed in the vein all the distance up the thigh. Occasionally such an injection even in the lower part of the thigh may cause a creeping thrombus that gradually reaches the saphenofemoral junction. Such thrombi have in the past been the cause for much alarm but unless accompanied by some infection they have never led to embolic phenomena. The chief reason against closing such a vein by injection alone is that recurrence is too common. With the saphenofemoral valves incompetent there is a column of blood above that is hammering away at this thrombosed vein and soon will recanalize it. Ligation at the saphenofemoral junction and injection into the distal segment gives the next best treatment, but in time this weight of blood and the hammering away that accompanies respiratory effort or feats requiring strain will dilate the small branches at the junction and establish a collateral varicosity around the ligated stump and either back into the obliterated saphenous to recanalize it or connect to dilate a parallel system (figs 1 and 2).

Howard² of Stanford University Clinics reports recurrence by recanalization in 100 per cent of such treated cases that he was able to observe twenty-nine months after treatment. However, in only 23 per cent had this recanalization gone to the extent of a return of varicosities. The other 77 per cent had recanalized in that period but had not yet dilated or caused a return of subjective symptoms. They were cosmetically and symptomatically cured but not cured to the satisfaction of the surgeon.

In figure 3 the five branches that are of utmost importance at this level are shown: (1) the superficial circumflex iliac vein, (2) the superficial inferior epigastric vein, (3) the superficial external pudendal vein, (4) the medial superficial femoral veins and (5) the lateral superficial femoral veins. At times not all these veins appear when dissection at the saphenofemoral junction is complete. At times they empty directly into the femoral instead of into the saphenous vein, at times they join the saphenous vein at lower levels, and at times some are absent entirely (fig 4).

TESTS FOR PATENCY

Before treatment is ever considered for any varicose vein, certain tests must be carried out. First a complete physical examination is done, including a urinary and a careful abdominal and pelvic examination—the latter in a search for possible obstructing tumors. Secondly the Perthes test to determine the patency of the deep femoral vein is done. This is easily performed by having the patient stand, applying a tourniquet above the knee tightly enough to cut off the superficial venous return and then having the patient walk the length of the room several times. If the deep venous return is not open he will experience pain very soon throughout the leg. If the deep system is open no pain will be felt and the dilated veins will tend to collapse. This collapse is due to the milking out of these veins by muscular contraction, which sucks or draws the blood through the communicating veins into the deep system and up the femoral vein. When one is uncertain with the results of this test, it is best to apply a tight bandage to the leg after it has been elevated and the superficial veins have been drained and then have the patient walk around the block two or three times. If no pain results the deep system is open, while if pain necessitates

removing the bandage it is closed.

When the deep venous return has been found to be open the next most important test is to see whether the arterial supply is sufficient. Pulsations are felt for in the dorsalis pedis and the tibialis posterior. In doubtful cases Samuel's test is made, wherein the leg is elevated to an angle of 45 degrees and the ankle is alternately flexed and extended while blanching of the plantar surface of the foot and pain in the calf are ascertained.

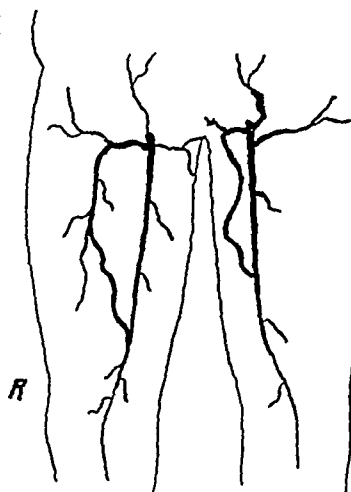


Fig 2—Collateral anastomoses shown in the right leg through the superficial circumflex iliac vein and in the left leg through the superficial external pudendal vein.

A more accurate test can be used if needed. This is the so-called histamine acid phosphate test as described by Sir Thomas Lewis of England.⁴ If a 1,000 solution of histamine acid phosphate in physiologic solution of sodium chloride is applied with a medicine dropper to the skin and six or seven punctures with a

² Howard, N. J. Ambulatory Treatment of Varicose State by Combined Ligation and Thrombosis by Injection. Arch Surg 29: 481 (Sept) 1934.

⁴ (a) Kilbourne, N. J. Varicose Veins. Indications and Contraindications to Injections. Ann Surg 93: 691 (March) 1931. (b) de Takats, Geza, Quint, Harold, Tillotson, B. I. and Crittenden, Jeanette. The Impairment of Circulation in the Varicose Extremity. Arch Surg 18: 671 (Feb) pt 1 1929.

fine hypodermic needle are made through it, within a few minutes the "triple response" can be observed. This consists of a small purple-red area, followed by a wheal and surrounded by a red flare around the puncture. This is the response of a normal person. The degree of the flare and the latent period of its appearance are the points to be observed and recorded. The

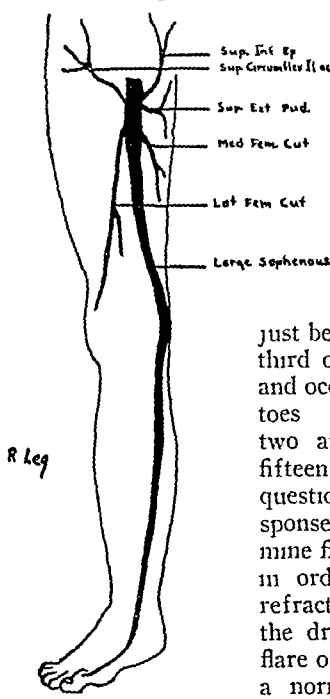


Fig 3—The five main venous branches at the saphenofemoral level

flare is caused by the dilatation of the small arterioles and is the result of a local nervous reflex. In arteriosclerotic or diabetic patients one sees a delayed or absent reaction. The reaction normally appears in two and a half minutes. The histamine flares are usually elicited above the knee,

just below the knee, at the middle third of the leg, above the ankle and occasionally at the base of the toes. Observations are made at two and a half, five, ten and fifteen minutes. If there is a question as to the normal response above the knee, a histamine flare is produced on the arm in order to rule out a general refractory state of the vessels to the drug. A delayed or absent flare on the leg in the presence of a normal reaction elsewhere is interpreted as an impairment of arterial flow. Such a test is made with the leg horizontal.

If arterial circulation is impaired in any degree, treatment of the varicose veins is contraindicated.

The question now arises as to just what veins should have this ligation treatment. In deciding this, two other tests are done. These are the Trendelenburg tests. With the patient lying on the operating table, the leg is elevated so that the vein drains out and a tourniquet is then applied above the knee. The patient is then asked to stand. If the veins fill quickly from below upward, it means that the valves of the communicating veins are incompetent and that the deep system is overflowing into the superficial. This is a Trendelenburg negative test. If one should release the tourniquet as soon as the patient stands up and the saphenous fills rapidly from above, it is a sign that the valves at the saphenofemoral opening are incompetent. This is called a Trendelenburg positive test. A combination of the two is called a Trendelenburg double test.

All cases presenting a Trendelenburg positive or a Trendelenburg double test are recommended for the ligation-injection treatment. This means all cases in which the saphenofemoral valves are incompetent. Such cases usually present large dilatations in the thigh but need not necessarily. At times the enlargements of the veins and the discomfort are entirely limited to the leg, and injection treatment alone, directed at that site, can at best give only temporary relief. There remains a column of blood above that will gradually increase in size and weight and will soon hammer out a new channel. Hence when one is confronted with a case presenting incompetent saphenofemoral valves, the treatment of choice is the ligation-injection treatment.

DETAILS OF THE OPERATION

After a study of many cadavers, Edwards⁵ of Brookline, Mass., has taken the location of the medial upper border of the fossa ovalis to average 2.5 cm lateral to the pubic tubercle and 1.5 cm below it. In addition to this approximate anatomic location the course of the vein in the upper thigh is marked with an applicator dipped in alcoholic gentian violet or other suitable stain. In many cases the saphenous in this region is not visible and is buried deep in fatty tissue. In such a case the percussion method of McPheeters of Minneapolis is used to outline its course. This method, or the P P T test, standing for percussion pulse transmitted, is carried out by having the patient stand on the opposite leg to relax the muscles of the affected leg and then percussing the vein at one point with the fingers of one hand and receiving the transmitted impulse with a finger of the other hand, moving both about until the course of the vein is outlined.⁶

The line of the incision is infiltrated with a local anesthetic by means of a blunt pliable spinal needle after the initial wheal is raised. Before each injection is made aspiration is performed to make sure that one is not in a vein. The vertical incision is then made carefully and slowly, because in some cases the vein lies directly beneath the skin, although it usually is buried deep in the superficial fascia. This fascia may be found to be very fibrous, since it is a downward continuation of Scarpa's fascia of the abdomen, gradually ending in the region of the middle of the thigh. Directly over the saphenous opening or fossa ovalis it is called the cribriform fascia. Dissection of all the branches spoken of is performed, and the saphenous vein is exposed up to its junction with the femoral. All branches are clamped, sectioned and

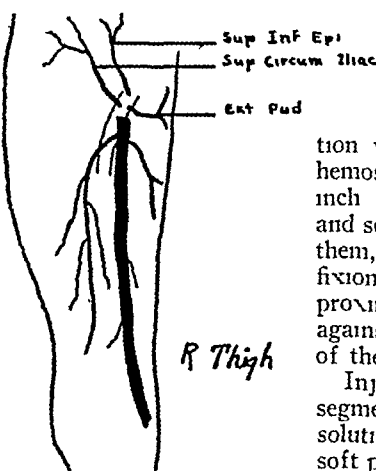


Fig 4—The superficial circumflex iliac, the external pudendal and the superficial inferior epigastric emptying directly into the femoral vein

ligated. The saphenous is then ligated with chromic catgut approximately 1 inch or closer to its junction with the femoral. A hemostat is then clamped 1 inch distal to the ligation and section is made between them, after which a transfixion suture is taken in the proximal stump to insure against a later "blow out" of the ligations.⁷

Injection of the distal segment with sclerosing solutions can be done with a soft pliable cannula. If one cannot be obtained, a stiffer cannula can easily be made from the shaft of a broken tonsil needle. The solution employed is 5 per cent sodium ricinoleate used in doses of from 4 to 10 cc., depending on the size of the vein.⁸ After the injection the cannula is removed, and ligation and transfixion are

⁵ Edwards E A Treatment of Varicose Veins Surg Gynec & Obst 59 916 (Dec) 1934
⁶ McPheeters H O Merkert C E and Lundblad R A Causes of Failure in the Injection Treatment of Varicose Veins J A M A 96 1114 (April 4) 1931
⁷ Postlethwaite F M Treatment of Varicose Veins with 2 per Cent Sodium Ricinoleate J Missouri M A 33 346 (Sept) 1936
⁸ Froehlich H W and Hendrickson E C Sodium Ricinoleate as a Sclerosing Agent Minnesota Med 18 594 (Sept) 1935 de Takat Geza Ambulatory Ligation of Saphenous Vein J A M A 94 1194 (April 19) 1930

done as before. After the wound has been flushed with sterile physiologic solution of sodium chloride, closure is done with dermal sutures or clips.

The dressing applied over this wound is quite important if the patient is to be ambulatory, as all these patients are. This dressing must not slip and it must be kept free from infection from gravitating sweat. Needless to say, this region is difficult to bandage. De Takats of Chicago uses a glue made from gum mastic 40 Gm., castor oil 20 drops and benzene 60 cc.⁹ Recently the elastic adhesive prepared by one of the nationally known pharmaceutical houses has proved of considerable worth. It comes in a tube and is easily applied and will easily hold any type of gauze dressing in place. Reinforcing dressings are taped over the glued dressing.

After the patient has taken a few steps around the operating room, any sacculi should be compressed with a pledget of cotton and taped in position. The walking is to distribute the solution and dilute it, while the sacculi compression is to aid in preventing a slough through its thin walls. This occurred in one of my cases at a point 12 inches from the site of injection, it can be best guarded against in that manner. Then a 3 or 4 inch Ace bandage is applied to the operated leg up to the knee. The patient is next asked to walk approximately eight or ten city blocks. The latter precaution is done to minimize the chances of pulmonary embolism and to help distribute more widely the sclerosing fluid.¹⁰

RESULTS

After a ligation-injection operation the patient experiences a burning sensation throughout the course of the vein. It becomes markedly reddened and tender but does not prevent his walking about. This burning leaves within twenty-four hours and the tenderness and redness subside in three or four days. The patient can usually tell to what point the sclerosing fluid gravitates in the leg, and this point marks its action on the vein. Wound sutures are removed in one week.

The dull pain and aches present before the operation in the affected leg are all gone within the first week. After a period of from one to two months has elapsed the patient is asked to return for a check up as to the extent of obliteration, and any patent veins or branches found then are given injections directly.¹¹ Varicosities of the small saphenous vein on the back of the calf of the leg are cared for at this time also.

Thus far there have been no reports of recurrence following this type of operation, either from dilatation of branches and recanalization of the old vein or from new venous channels through the inguinal scar.

Fatigue in the affected leg disappears quickly, likewise edema, eczema and cramps. Leg ulcers stop oozing and bleeding and take on a more healthy appearance. At times later injections are necessary to occlude any feeder veins around an ulcer. Legs with large ulcers are bandaged with an elastoplast bandage instead of the plain Ace bandage.

SUMMARY

1. Recurrence in cases presenting incompetent saphenofemoral valves when treated by injection alone or by ligation and injection alone is far too common.

⁹ de Takats, George and Quillen Lawrence. Ligation of the Saphenous Vein. Arch Surg 26 72 (Jan.) 1933. de Takats.
¹⁰ Colt, G. H., Ramsey, Isobel S. W. and Morrison, Margaret M. W. The Injection of Varicose Veins. Brit M J (July 13) 1935.
¹¹ Swinton, N. W. Recent Trends in the Treatment of Varicose Veins and Varicose Ulcers. S Clin North America 16 1723 (Dec) 1936.

2. Ligation at the saphenofemoral junction, dissecting out and section of all five branches at that level and injection of the distal end of the saphenous vein, is the treatment of choice.

3. All cases in which the saphenofemoral valves are incompetent are indicated for the ligation-injection treatment.

Until some newer idea or operation supplants the ligation-injection form of treatment, it must be admitted that it gives the greatest promise of permanent success with the least amount of danger, pain or mutilation in the more extensive varicose veins.

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Clinical Notes, Suggestions and New Instruments

BURSITIS OF SARTORIUS BURSA AN UNDESCRIBED MALADY SIMULATING CHRONIC ARTHRITIS

ELI MOSCHCOWITZ, M.D., NEW YORK

The disease I am about to describe is fairly common. I have seen approximately twenty or twenty-five cases in the past ten years. For an unknown reason the malady occurs almost exclusively in women. The history is quite characteristic and pathognomonic. These patients complain of pain in both knees only on ascending or descending stairs. Walking on the level is not painful in the least. On examination, movement of the knee joint in both extension and flexion causes no pain. The joint itself is not tender. On the other hand, a tender area is found on the inner tibia at the exact site of the insertion of the conjoined tendon of the sartorius, semitendinosus and gracilis tendons. Occasionally a slight swelling is found in this area but, as a rule, only tenderness is present. X-ray examination of the joint reveals no evidence of arthritis. In a few instances I made lateral X-ray films of this area but nothing abnormal was found. In almost every instance the patient had large lower limbs, out of proportion to the size of the body. In some instances there was overweight. My explanation of the malady is that it is a bursitis. According to Quain, there are two bursae in this region: (1) the bursa anserina between the conjoined tendon of the gracilis and semitendinosus muscles and the head of the tibia, and (2) the bursa musculi sartorii lying between the tendon of the sartorius muscle and the conjoined tendon of the gracilis and semitendinosus muscles. Occasionally there is a communication between these two bursae. In all probability the bursitis results from strain in the use of the sartorius and gracilis muscles, which act to lift the body in stepping upward and downward.

I have not been able to find the syndrome I have described in the textbooks on surgery or orthopedics, nor is there any mention of it in the Index Catalogue of the Surgeon General's Library or in recent medical literature. Reichel¹ remarks that inflammation of the bursa anserina may result after trauma, gonorrhea, syphilis or tuberculosis but does not mention clinical features. Rose and Carless² say that the bursa beneath the insertion of the semitendinosus and gracilis is sometimes inflamed and is liable to cause osteoplastic periostitis of the subjacent inner surface of the tibia. Hertzler³ mentions bursitis of the anserina bursa. He says that no definite movement can be identified as the one most likely to cause pain and that the area of tenderness is difficult to localize.

I have treated this malady in various ways and have found that the best results are obtained by treatment for reduction of weight. I have found no short road to success. Obviously the recognition of the disease is important from the point of view of prognosis.

25 West Sixty-Eighth Street

¹ Reichel. Handbuch der praktischen Chirurgie, vol. 5, p. 810.
² Rose, W. and Carless, Albert. Manual of Surgery, New York, 1924, p. 483.
³ Hertzler. Cyclopedia of Medicine, Philadelphia 3, 6, 1937.

THE USE OF THE PHOSPHATASE TEST IN DETECTING UNDERPASTEURIZED MILK IN SAN FRANCISCO

J C GEIGER M D, AND CLINTON DAVIS PH G SAN FRANCISCO

The legal standards for the process of pasteurization of milk supplies have been well defined and clarified. Likewise the process is generally accepted as a safety measure particularly in city milk supplies and often in the home.

The question as to whether or not a milk has been adequately pasteurized has long been a problem for organizations engaged in dairy control work. Local inspection at the plant depends on observation of the charts used to record the length of time and the temperature. The accuracy of these charts depends on the care and attention given by the pasteurizing management and employees. The laboratory, however, has looked for a simple objective test in an effort to determine when the finished product is satisfactory and safe. To accomplish this, considerable attention has been given to the enzymes amylase and phosphatase which are present in raw milk. Rothenfusser¹ worked out a test for pasteurized milk by the use of iodine and starch. Scharer² modified this test by eliminating the basic lead acetate and using acetic acid-chloroform reagent. These two tests were for detecting the presence or absence of the enzyme amylase. Bengen's³ test was based on the fact that by heating milk for at least five minutes at 63-65 C a small portion of milk albumin is denatured and later precipitated.

The laboratory of the San Francisco Department of Public Health has used the Rothenfusser test and Scharer's modification of this test for the past four years. Experience in the use of these tests indicates either that the amylase may vary in the different herds supplying milk to San Francisco or that the α -amylase and β -amylase withstand heating at 65 C for thirty minutes, thereby making the starch-iodine reaction unreliable. The report of Richardson and Hankinson⁴ seems to confirm the latter observation.

The phosphatase test of Kay and Graham,⁵ however, appeared to offer more reliable results. Therefore in February 1937 any further tests on the amylase were discontinued and the phosphatase test was substituted. The test briefly is as follows:

1 To 10 cc of the buffer substrate solution (one tablet containing disodium phenylphosphate and sodium barbitone is dissolved in 50 cc of water) contained in a 25 cc stoppered test tube, add 0.5 cc of the milk and mix thoroughly.

Results of Test Runs

Source	Time	Temperature F	Color	Interpretation
Receiving vat		57	Deep blue	Unheated
Vat before pasteurizing	11 00 a m	74	Deep blue	Unheated
Pasteurizing vat	11 10	90	Deep blue	Unheated
Pasteurizing vat	11 20	120	Deep blue	Unheated
Pasteurizing vat	11 30	139	Deep blue	Unheated
Pasteurizing vat	11 40	143	Blue	Underpasteurized
Pasteurizing vat	11 50	143	Light blue	Underpasteurized
Pasteurizing vat	12 00 m	142	Faint blue	Pasteurized
Vat after pasteurization	12 00 p m	120	Faint blue	Pasteurized
Cooler	12 20	34	Faint blue	Pasteurized
Bottled	12 25		Faint blue	Pasteurized

2 Add two drops of chloroform, stopper the tube and incubate at from 37 to 38 C for one hour.

3 At the end of this time, add 4.5 cc of the diluted Folin and Ciocalteu reagent (1 volume of reagent and 2 volumes of water) mix, allow to stand for three minutes and filter.

4 To 10 cc of the filtrate add 2 cc of the sodium carbonate solution (14 per cent anhydrous sodium carbonate) mix thoroughly and place in boiling water for five minutes and again filter.

5 Compare the color of the filtrate in a 13 mm tube with the Lovibond standard 2.3 blue glass in the "Limitester."

If the color of the filtrate exceeds that of the standard glass it may be safely assumed that the milk has been improperly pasteurized, that is, the temperature has been too low or the time of heating too short.

During the period that the phosphatase test has been used, 155 samples of pasteurized milk and cream have been examined. Of this number twenty-five, or approximately 16 per cent, were classified as being inadequately pasteurized. The twenty-five specimens were from three plants, taken at irregular intervals. One particular milk plant was a persistent offender and as a result an inspector was detailed to observe and check the operation from the time that the milk arrived until the end of the pasteurizing period. The milk was then brought to the laboratory and tested. Subsequently this particular dairy plant produced an adequately pasteurized milk.

The operators of all dairy plants were notified that shortening of the pasteurization time can be demonstrated by the phosphatase test and would not be tolerated. As a result of this warning all the pasteurized milk and cream examined in the laboratory have passed this test satisfactorily.

In order to examine the practicability of the phosphatase test more fully specimens of milk were withdrawn from the pasteurizing vat of commercial plants at ten minute intervals and submitted to the laboratory for examination.

The results of the test runs are given in the accompanying table.

CONCLUSIONS

1 The experience of the San Francisco Department of Public Health with the phosphatase test as advocated by Kay and Graham would indicate that adequately pasteurized milk will invariably give a negative test.

2 This test, therefore, offers reliable laboratory evidence to confirm proper pasteurization of milk and cream of market supplies.

MENTAL DISTURBANCES FROM ATROPINE OR NOVATROPINE GIVEN TO SUBJECTS UNDER THE INFLUENCE OF INSULIN

J P QUIGLEY, PH D, CLEVELAND

A dangerous situation may develop if atropine or related compounds are administered after the use of insulin. I have observed in a significant proportion of cases that therapeutic doses, although relatively innocuous when employed alone, may produce marked mental symptoms when acting together.

Atropine is frequently employed therapeutically in doses of from 0.6 to 1.8 mg and rarely produces mental symptoms except in persons who are sensitive to atropine. Large doses (from 8 to 10 mg), however, may produce exaltation, excitement, talkativeness, amnesia, hallucinations, psychic confusion and sensory delusions.¹ In fifteen experiments in which my subjects received from 0.6 to 1.8 mg of atropine alone, or what approximately corresponds to it, from 2.5 to 3.5 mg of novatropine, mental disturbances never developed. I also performed twenty-four experiments in which 20 units of insulin was used as the sole medication. No symptoms were produced more marked than apprehension, sweating, hunger, trembling and weakness. Pronounced hypoglycemia can produce mental confusion, amnesia, slow and unintelligible speech, and the like.²

Six normal medical students were the subjects for twenty-three experiments in which the drugs were used in combination. After a fasting period of approximately eight hours, from 12 to 20 units of insulin was administered subcutaneously. About an hour and a half later a mild hypoglycemic reaction developed: anxiety, sweating, trembling, weakness and gastric hypermotility were present in moderate forms. At this time the subcutaneous administration of atropine (from 0.6 to 1.8 mg) or novatropine (from 2.5 to 3.5 mg) resulted within eight minutes in a complete disappearance of all the symptoms mentioned subjectively and objectively: the individuals felt normal and showed entirely

From the Department of Physiology Western Reserve University School of Medicine.

¹ Sellmann Torald. A Manual of Pharmacology. Philadelphia W B Saunders Company 1936. Meyer and Pick. Die Experimentelle Pharmakologie. Berlin and Vienna 1933.

² Harris Seale. Hyperinsulinism. A Definite Disease Entity. J. M. A. 101: 1958 (Dec 16) 1933. Rynearson E H and Moersch F P. Neurologic Manifestations of Hyperinsulinism and Other Hypoglycemic States. Ibid 103: 1196 (Oct 20) 1934.

From the San Francisco Department of Public Health.

¹ Rothenfusser. Pasteurized Test for Milk. J Dairy Sci. 15 No 3 1932.

² Scharer H. Chemical Laboratory Dept of Health New York City. Personal communication to the authors.

³ Bengen M F. Detection of Low Temperature Pasteurization. Ztschr. f. Untersuchung der Lebensmittel 66 July August 1933.

⁴ Richardson C A and Hankinson C L. Amylase in Cow's Milk. J Dairy Sci. 19: 761-772 (Dec.) 1936.

⁵ Kay H D and Graham W R. J Dairy Research 6, No 2 1935.

normal behavior. At this stage of the action the two preparations are antagonistic. The antagonistic effect also applies to gastric motility, as has been reported in detail elsewhere.³

On twelve occasions cerebral manifestations developed. The most pronounced response (obtained in six experiments) took the following pattern. The subjects remained quiet, frequently sleeping for approximately twenty-five minutes (or longer if undisturbed) following the administration of atropine or novatropine. At the end of this interval, when an attempt was made to converse, the speech was found to be disconnected and moderately hesitant. The subjects stated that difficulty was encountered in speaking words that they had clearly in mind. This statement minimized the situation, for the mental processes were actually dulled and distorted. Incorrect, though frequently logical, answers were given to questions. Imaginary but not necessarily impossible experiences were related with full belief in their validity. The thoughts wandered and were confused so that spontaneous speech was fragmentary and vacillating. The most outstanding symptom was a state of complete amnesia.

Giddiness, staggering or other disturbances in locomotion were not evident, except that walking as well as other movements was slow and deliberate. Commands were willingly obeyed and the subject's general behavior suggested automatism.

When food was proffered it was readily consumed. The mouth and throat were dry, thus deglutition was moderately difficult. A mild thirst was experienced. Within twenty to thirty minutes of ingesting approximately 200 Gm of food, chiefly carbohydrates, the symptoms had completely disappeared. Evidently the hypoglycemic state was essential for the development and maintenance of the cerebral effects. In the absence of further ingestion of food, the cerebral effects reappeared on a few occasions in mild form after approximately an hour.

Although the symptoms bore some resemblance to those from toxic doses of atropine or insulin, they differed from them in significant respects and constituted a distinct picture, thus substantiating the conclusion that they did not result from a toxic dose of either drug alone. In contradistinction to atropine poisoning, excitement and loquaciousness did not develop, while hallucinations or delusions were absent or not pronounced. The size of the pupil and the reactions to light remained normal, and no disturbance of vision was observed except in one person who received 20 units of insulin followed by 35 mg of novatropine and subsequently experienced moderate dilatation of the pupil and a decrease in accommodation, making it impossible to read ordinary print when held 1 foot from the eyes. The skin did not become flushed or hot and dry, nor were abnormal skin sensations experienced. The usual symptoms of hypoglycemia (weakness, sweating, hunger, trembling, apprehension and the like) were not experienced during this interval.

Following the administration of atropine, the symptoms in four experiments were similar to those previously described but more mild, and in two experiments the only unusual symptoms were disturbances of speech and amnesia. In the remaining eleven experiments, mental disturbances did not develop and the subjects experienced only a complete relief from the hypoglycemic symptoms. Two subjects were more inclined to display the pronounced effects but no subject persistently failed to show the phenomenon.

CONCLUSIONS

The manifestations of insulin hypoglycemia occurring in man (anxiety, trembling, sweating, weakness and gastric hypermotility) were effectively counteracted by the administration of moderate doses of atropine (from 0.6 to 1.8 mg) or novatropine (from 2.5 to 3.5 mg).

Subsequently in 50 per cent of the experiments a synergistic action of insulin with atropine or novatropine developed, consisting of pronounced mental disturbances (chiefly amnesia and speech disturbances) of varying intensity.

The observations justify a warning against the administration of atropine preparations to a subject in the hypoglycemic state probably without regard to the mechanism by which the hypoglycemia is produced.

3 Quigley J. P., Johnson V. and Solomon E. I. Action of Insulin on the Motility of the Gastro-Intestinal Tract. I. Action on the Stomach of Normal Fasting Man. *Am. J. Physiol.* 90: 89 (Sept.) 1929. Quigley J. P. The Inhibition of Human Gastric Hypermotility by Atropine or Novatropine. *J. Pharmacol. & Exper. Therap.* to be published.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER, Secretary

LEPEL SWP PORTABLE SHORT WAVE DIATHERMY MACHINE ACCEPTABLE

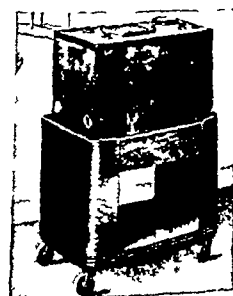
Manufacturer: Lepel High Frequency Laboratories, Inc., New York

The Lepel SWP Portable Short Wave Diathermy Machine is designed for medical and surgical use. It operates by means of a spark gap instead of tubes. The circuit differs only in minor details from one in the unit previously accepted by the Council (*THE JOURNAL*, Nov. 16, 1935, p. 1606). Various types of electrodes may be used with this unit: air-spaced condensers, cuff electrodes, the inductance cable and those designed for surgery.

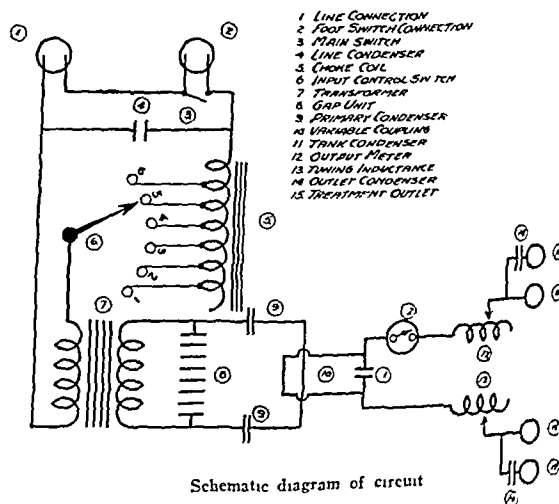
The wavelength for this machine is between 12 and 13 meters, as measured in the tank circuit without the treatment electrodes attached. When the treatment electrodes are attached, two wavelengths result in the patient circuit, one shorter and one longer than the tank circuit wavelength. The shorter is around 10.5 meters and the longer between 14 and 15 meters.

The input required to operate the machine at full load is 82 amperes at 117 volts. Since no reliable method has been proposed to measure the output energy available to the patient, the value is not given. When operated at full load for two hours the transformer temperature rise met the requirements acceptable to the Council.

The firm presented evidence to substantiate its claims concerning the heating ability of the unit with plate and coil technique and also observations on its performance in pelvic heating.



Lepel SWP Portable Short Wave Diathermy Machine.



Schematic diagram of circuit

Data were not required on the cuff technique because the circuit of the new unit differs only slightly from the one reported previously giving the cuff measurements. Reliable investigators performed tests on the machine for the firm. Tests employing the plate and coil technique were run. There were two observations on each of four subjects: air-spaced electrodes being used in six cases and the inductance coil in two cases. The tests are described as follows.

Plate Technique—The plates were rectangular 9 by 23 cm. left in place so as to maintain approximately constant distance from the skin. The distance averaged 2 cm. Of this space 1.5 cm. was occupied by the

foam rubber composition into which the plates were molded. A layer of air with an average thickness of 0.5 cm was maintained between the rubber and the skin. The electrodes were supported on the arms provided with the machine care being taken that the air space was maintained at all times. Both electrodes were placed on the anterior aspect of the thigh—one just above the knee and the other on the upper thigh. The average distance between the centers of the plates was 17.2 cm. The average distance between the nearest plate edges was 5.7 cm. The average thigh circumference of the subject was 43 cm.

In all these tests the machine was operated on contact button 5 tuned to resonance for ten minutes then raised to contact button 6 full output for the remainder of the twenty minute test period. The room temperature varied from 68 to 76 F. The room humidity ranged from 48 to 59 per cent.

The average temperatures of six observations, with air-spaced technic, and the average in two observations, coil technic, are given.

Average Temperatures in Six Observations Air Spaced Technic

Deep Muscle		Subcutaneous		Skin		Mouth		Rectal	
Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
97.1	106.2	93.9	104.8	88.9	95.5	95.7	98.9	98.9	99.1

Average Temperatures in Two Observations Coil Technic

97.4	105.0	93.9	103.3	88.1	93.1	98.8	99.1	99.2	99.2
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Coil Technic—In both tests carried out with this technic a 9 foot coil was used, four convolutions being wrapped about the thigh of the subject. In one test the coil was separated into two portions, i. e. two turns spaced an inch apart above the knee the other two turns also spaced an inch apart placed on the upper part of the thigh leaving a clear space of 3 inches on the anterior aspect between the middle turns. In the second test the coil was wound uniformly and consisted of four turns spaced an inch apart. Measurements were made at the center of the coil in each case.

The room temperature varied from 70 to 74 F. the humidity from 50 to 61 per cent. The machine was set as in the tests on plate technic.

The firm also furnished evidence with regard to pelvic heating. The technic for pelvic heating consisted in using a metal vaginal electrode with hollow stem holding thermometer and a large condenser pad over the abdomen. The treatment was administered at comfortable tolerance of the patient. The averages for five treatments are given here. The initial reading was taken at once without allowing the temperature of the electrode to reach the surrounding temperature.

Average Pelvic Temperatures in Six Observations

Initial 95.4	Final 106.9
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Average Temperature in Three Observations, Plate Technic

Deep Muscle		Oral	
Initial	Final	Initial	Final
97.1	103.7	98.1	98.5

The Lepel SWP unit was placed in a clinic acceptable to the Council for investigation. A qualified investigator was authorized by the Council to run tests for determining the heating produced in the human thigh when employing both plate and coil technics. The investigator used the customary thermocouple method of obtaining temperatures in the thigh. His final tem-

Average Temperatures in Three Observations, Coil Technic

Deep Muscle		Oral	
Initial	Final	Initial	Final
98.4	102.8	98.4	98.7

perature readings for deep muscle were somewhat less than those submitted by the firm. Two male subjects were used. Three observations were made with each technic. For one, two plates, 9 by 23 cm., were placed equidistant from the cannula on the anterior aspect of the thigh and in the same plane. Contact No. 6 was employed. Skin tolerance of the patient was the gauge of dosage.

For the coil technic, four turns of the cable were placed around the thigh with coils $2\frac{1}{8}$ inches apart, center to center. Two layers of bath toweling were used for spacing.

Since the temperature readings obtained during the investigation carried out under the direction of the Council met its requirements the Council voted to include the Lepel SWP Portable Short Wave Diathermy Machine in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PALL NICHOLAS LEECH Secretary

SODIUM MORRHUATE (See New and Nonofficial Remedies, 1937, p. 431)

The following dosage forms have been accepted.

Ampul Vials Solution Sodium Morrhuate 5% with Benzyl Alcohol 2% 5 cc size. Each cubic centimeter contains 0.05 Gm sodium morrhuate and 0.02 Gm benzyl alcohol in aqueous solution.

Ampul Vials Solution Sodium Morrhuate 5% with Benzyl Alcohol 2% 25 cc size. Each cubic centimeter contains 0.05 Gm sodium morrhuate and 0.02 Gm benzyl alcohol in aqueous solution.

Ampul Vials Solution Sodium Morrhuate 10% with Benzyl Alcohol 2% 25 cc size. Each cubic centimeter contains 0.1 Gm sodium morrhuate and 0.02 Gm benzyl alcohol in aqueous solution.

Prepared by the National Drug Co. Philadelphia. No U. S. patent or trademark.

PENTOBARBITAL-SODIUM-LILLY (See New and Nonofficial Remedies, 1937, p. 112)

The following dosage forms have been accepted.

Pulvules Pentobarbital Sodium Lilly $\frac{1}{4}$ grain. Pentobarbital sodium N. N. R. 0.05 Gm ($\frac{3}{4}$ grain) and starch 0.075 Gm.

Suppositories Pentobarbital Sodium Lilly 2 grains. Each suppository contains pentobarbital sodium N. N. R. 0.13 Gm (2 grains) in a cocoa butter base.

CARBON DIOXIDE—Carbonic Acid Gas—Contains not less than 99 per cent by volume of CO.

For standards see U. S. Pharmacopeia under Carbonic Dioxide.

Actions and Uses—Carbon dioxide is the natural stimulant to respiration. It is frequently added to oxygen in varying proportions for supplying artificial respiration, and as a stimulant to the respiratory center. The proportions must be regulated carefully. A great excess of carbon dioxide causes death by asphyxia.

'Pureco' Carbonic Acid Gas—A brand of carbon dioxide—U. S. P.

Manufactured by Pure Carbonic Inc. New York, N. Y. No U. S. patent.

LAROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1937, p. 60)

The following additional dosage form has been accepted.

Tablets Larocaine Hydrochloride 0.25 Gm. Each tablet contains larocaine hydrochloride 0.25 Gm. and boric acid 0.025 Gm.

PROCAINE-ABBOTT (See New and Nonofficial Remedies, 1937, p. 69)

The following additional dosage forms have been accepted.

Ampoules Solution Ephedrine Hydrochloride 2.5 per cent and Procaine Hydrochloride 1 per cent 2 cc.

Ampoules Solution Ephedrine Hydrochloride 5 per cent and Procaine Hydrochloride 1 per cent 1 cc.

CHAPPEL LIVER EXTRACT (SUBCUTANEOUS) (See New and Nonofficial Remedies, 1937, p. 317)

The following dosage form has been accepted.

Vials Chappel Liver Extract (Subcutaneous) 10 cc.

SULFANILAMIDE (See THE JOURNAL, July 31, 1937, p. 358)

Sulfanilamide-Lilly—A brand of sulfanilamide N. N. R.

Manufactured by Eli Lilly and Co. Indianapolis. No U. S. patent or trademark.

Sulfanilamide Tablets 5 grains.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 23, 1937

PSYCHOTHERAPY IN GYNECOLOGY AND OBSTETRICS

The role of psychogenic factors in functional disorders is now widely recognized. Such symptoms as leukorrhea, dyspareunia and frigidity (often associated), vaginismus, dysmenorrhea, hyperemesis gravidarum, pseudocyesis, and even amenorrhea and menorrhagia, often have their origin in psychopathologic states. Disturbances in puberty and in the menopause bear a distinct psychopathic stigma. Far too frequently women undergo radical operation for relief of symptoms without obtaining improvement. Sixty per cent of a group of clinic patients studied by Johnson¹ were not improved after various pelvic operations. Of these women 76 per cent subsequently had pain in the lower part of the abdomen, 34 per cent had a sense of weight in the pelvis and backache, 24 per cent had menstrual disturbances, and 52 per cent had chronic endocervicitis. Johnson considers them to be "inadequate individuals," 50 per cent having family histories of nervous disorders or insanity, 32 per cent a history of tuberculosis and 14 per cent a history of thyroid dysfunction, 84 per cent had been pregnant, with an average of three pregnancies, and less than 24 per cent had had more than a grade school education. Economic and social disturbances, malnourishment, the fear of repeated pregnancies, and marital discord were important factors in causing the symptoms in these fifty women.

The difficulty of proving such symptoms to be of psychic origin by experimental means was brought out by Horney². Dysmenorrhea, for example, may not be the result of a single emotional strain or conflict but of a series of them, perhaps spaced over several years. The logical approach to a successful solution of the problem is a historical one. A careful, sympathetic elicitation of the woman's emotional and psychologic biography may often reveal the connection between such conflicts and her present complaints.

Mayer³ believes that pelvic symptoms are exaggerated more readily than others because many emotional conflicts of women resulting from personal and social restrictions, besides the normal processes of menstruation, defloration and childbirth (all associated with pain and bleeding), center attention on the genital zone and predispose to undue anxiety in connection with local symptoms. The functional cycles are under endocrine control, which is influenced by changes in the sympathetic nervous apparatus, increasing the vulnerability. Acute or chronic psychologic influences, such as a fear or frustrated hopes, are associated not only with symptoms but with organic change. Amenorrhea may be a symptom of mental disorders of wide range. Irregular or excessive bleeding may have a psychopathic basis, although here diagnostic curettage should precede the drawing of such a conclusion. Prolonged mental treatment may be needed in dysmenorrhea in which psychogenic factors are responsible or at least contributory. Certainly expert psychotherapy is indicated before radical operative intervention is attempted. Dyspareunia is usually psychogenic in origin, after the patient's confidence has been secured. Psychotherapy in addition to local treatment often accomplishes brilliant results. Pruritus vulvae and leukorrhea respond to psychotherapy when there are mental contributory factors. Often the chief symptom is found to be one of many symptoms appearing in sequence or in groups. To the patient they are "useful" symptoms, defending her against whatever is threatening her, even though she is not cognizant of this. Other gynecologic problems have psychologic factors which require insight and careful handling, such as in the field of contraception, the treatment of sterility, the prevention of cancerophobia and the treatment of endocrinologic and congenital gynecologic abnormalities.

When the determined organic changes fail to explain a gynecologic complaint, the physician must consider the possibility of a psychogenic cause which may be accessible to himself or to one more expert in psychologic methods. Some objections have been raised as to the propriety of the administration of psychotherapy by one who is treating organic ills as well, but in the great majority of cases no ground for such objection exists. Most of these patients do not require formal psychoanalysis but perhaps only simple suggestive treatment, which is best received from their own physician. What is obviously required is the gaining of the patient's complete confidence, an intelligent psychanalysis, the removal of anxiety where possible, assistance in the acceptance of reality, instead of a retreat from it, perhaps a change of environment, a building up of the general resistance, local treatment with its suggestive potency, and the judicious use of sedative with recourse to a psychoanalyst familiar with the problems when necessary.

¹ Johnson W. O. Exhaustion States with Pelvic Symptoms. South M. J. 26: 129 (Feb.) 1933.
² Horney Karen. Psychogenic Factors in Functional Female Disorders. Am. J. Obst. & Gynec. 25: 694 (May) 1933.

³ Mayer Max D. The Status of Psychotherapy in Gynecology. Am. J. Obst. & Gynec. 24: 47 (July) 1937.

DEATHS FOLLOWING ELIXIR OF SULFANILAMIDE-MASSENGILL

Nine out of ten patients who had been given a proprietary elixir of sulfanilamide died recently in Tulsa, Okla., from anuria which apparently resulted directly from poisoning by this elixir.¹ As we go to press, the record is swelled by the report of four additional deaths with another likely fatality in East St. Louis. The product was prepared and sold by the S. E. Massengill Company of Bristol, Tenn. From tests by the chemical laboratory of the American Medical Association, this elixir appears to be a solution of approximately 40 grams of sulfanilamide to a fluidounce of a menstruum containing about 72 per cent of diethylene glycol (by volume) with flavoring. Apparently it is not known whether the toxicity of sulfanilamide is enhanced by the presence of diethylene glycol—or vice versa. The solvent, diethylene glycol, is itself not an indifferent substance. While its use is not permitted in food products because of the absence of any scientific evidence establishing beyond doubt its harmlessness when taken internally, it has long been utilized as a solvent in various industrial processes. The dosage of the elixir administered unquestionably contained a large amount of this substance. It would appear to be clear that the diethylene glycol or the diethylene glycol-sulfanilamide combination rather than the sulfanilamide was responsible, one of the patients had received tablets over a period of two weeks without any bad effects and then showed the typical train of symptoms after taking the elixir. From twenty-four to forty-eight hours after administration of the substance, nausea, vomiting, malaise and sometimes diarrhea developed, then complete anuria appeared within two to five days. The nonprotein nitrogen, urea nitrogen and creatinine rose rapidly. In the postmortem examination there was usually an accumulation of fluid in the serous cavities, with degeneration of the tubules of the kidney and a peripheral necrosis of the liver.

The laboratory of the American Medical Association is conducting careful chemical and pharmacologic experiments to indicate the toxic factors of the elixir concerned. Possibly other factors may be involved such as the decomposition of the sulfanilamide in the presence of the aqueous diethylene glycol solution. Possibly there may have been some error in the process of manufacture. Indeed the possibilities are unlimited, since we are here concerned with a preparation not standardized by any reliable agency, semisecret in composition and apparently hastily rushed into the market to meet an overenthusiastic reception of a new remedy.

This tragic experience should be a final warning to physicians relative to the prescribing and administration

of semisecret, unstandardized preparations. It would indeed be a pity if this tragedy were to be repeated again and again as more and more new remedies are put forth. THE JOURNAL and the Council on Pharmacy and Chemistry of the American Medical Association have been alert in their attempts to inform the medical profession as to the status of sulfanilamide. The Council on Pharmacy and Chemistry has not accepted any stock solution of this substance. It has accepted a sufficient number of preparations developed by manufacturers to supply the needs of the medical profession for this substance in the present state of our knowledge. Acceptance by the Council indicates that the products have been examined and that there is sufficient clinical evidence relating to their use to indicate at least their safety when prescribed in the designated manner.

A physician is not compelled to follow the United States Pharmacopeia, the National Formulary or the Council on Pharmacy and Chemistry in the prescribing of drugs. He may, if he wishes, prescribe anything that he thinks may be of benefit for his patient. Indeed, the Council on Pharmacy and Chemistry encourages scientific experimentation with new remedies, provided these experiments are carried out with suitable controls and with adequate facilities for therapeutic investigation. In the usual conditions of practice, however, it is far safer—as this tragedy again emphasizes—to limit prescriptions of nonofficial products to those accepted by the Council on Pharmacy and Chemistry and to use them as described in New and Nonofficial Remedies.

Current Comment

LIPID PNEUMONIA AND OIL IN THE LUNGS

Fatal cases of pneumonia due to the aspiration of oily preparations into the lungs have been reported in the American medical literature as lipid pneumonia since 1925. The condition is observed usually in children under 2 years, generally the result of too frequent instillations of oily nose drops. As recently as 1935, cases were reported by Karelitz and Denzer,¹ Langdon,² Garrison³ and Cannon,⁴ and in 1936 by Klinck⁵ and by Baumgartner and Angevine.⁶ The pathologic anatomy has been variously described. In the case cited by Cannon, necropsy showed the following essential features: "pneumonia due to aspiration of lipid, with extensive formation of abscesses in the right upper and lower lobes, focal fibrinous and fibrinopurulent pleuritis on the right side, acute generalized fibrinopurulent peritonitis and suppurative otitis media on the left side." Klinck stated that the fats and oils which cause this disease reach the alveoli of the lungs, where they col-

¹ In the preparation of this editorial THE JOURNAL has been aided by information received through Drs. James Stevenson, president of the Tulsa County Medical Society; Homer A. Ruprecht of the Springer Clinic, Tulsa; Darwin B. Childs of the Childs Clinic, Tulsa; and I. A. Nelson of the Springer Clinic, Tulsa. Officials of the Massengill Company have sent a confidential statement of the composition of the product.

² The Chemical Laboratory found no evidence of decomposition of sulfanilamide in the specimen of elixir examined.

¹ Karelitz, Samuel and Denzer, B. S. J. Mount Sinai Hosp. 2: 6 (May/June) 1935.

² Langdon, John. Rhode Island M. J. 18: 65 (May) 1935.

³ Garrison, H. F. South M. J. 28: 322 (April) 1935.

⁴ Cannon, P. R. Tr. Chicago Path. Soc. 14: 219 (June 1) 1935.

⁵ Klinck, C. H. Jr. Albany M. Ann. 53: 71 (June) 1936.

⁶ Baumgartner, Leona and Angevine, D. M. Am. J. M. Sc. 192: 252 (Aug.) 1936.

lect and give rise to chronic inflammatory processes resulting in fibrosis. Lipoid pneumonia of the adult type, Ikeda⁷ says, is a distinct clinicopathologic entity. Liquid petrolatum is the chief etiologic agent. The pneumonia develops slowly over a period of years and is invariably accompanied by bronchopulmonary symptoms. The typical pulmonary lesion represents a chronic nonspecific nonsuppurative granulomatous foreign body leading to ultimate tumefaction and fibrosis. These patients, Bolduan⁸ says in a recent bulletin prepared for the information of the medical and nursing personnel of the department of health of New York City, show the clinical signs and symptoms of a low grade pneumonia, and examination with x-rays usually shows a shadow along the sternal border of the pulmonary fields. At necropsy the lungs show evidence of the reaction of the tissues to a foreign body and the results of a secondary invasion by bacteria. Large amounts of oil are often present in the lung. Probably there are many cases of this disease other than the fatal ones that have been reported. Oily nasal drops are not the only agents that may cause this form of pneumonia in infants; cod liver oil and even cream have been involved in some of the cases. Although the majority of the reports have concerned infants under 2 years, frequently debilitated elderly people and adults weakened through illness also may be susceptible to pneumonia from this type of foreign body. The continued appearance of reports of fatal cases indicates the necessity for greater care in the use of oily materials in the respiratory tract.

NEW INVESTIGATIONS OF PROTEIN FRACTIONS

Although primarily of chemical interest, the fractionation of proteins involves a potentially significant aspect of the understanding of human physiology, especially that of the kidneys and blood. Thus fundamental work on the nature of proteins may rapidly become of medical interest. The brilliant investigations of Sorensen¹ have clearly indicated that, even after elaborate purification, proteins in solution are not homogeneous but are more accurately viewed as members of a reversibly dissociable system. Thus the isolation of a crystalline serum albumin may merely signify that certain components in the serum can combine into a product which is insoluble under those particular circumstances. Definite evidence of the lack of homogeneity of crystalline serum albumin has been recently advanced by Hewitt.² He succeeded in separating horse serum albumin into two utterly different fractions. One is a crystalline albumin which is free from carbohydrate, the other is a freely soluble fraction which cannot be readily coagulated by heat and which does contain considerable quantities of carbohydrate. Hewitt's investigations appear to corroborate Sorensen's conclusions.

They may indicate, however, that what Hewitt has done has been to alter the conditions for the isolation of the protein fractions which merely brings about a separation of two components of the dissociable systems usually called serum albumin. In complex protein solutions like blood serum, milk or egg white, several different component systems are present,³ and between these exists an equilibrium which depends on conditions in the solution. This equilibrium may be reversibly altered by changes in the composition of the solvent. The chief significance of these investigations and their interpretation is that the euglobulin, pseudoglobulin and serum albumin would seem to be fractions of a complex protein system rather than actually differing substances. If this is true and if their relative proportions can be altered by changing the salt concentration of the medium in which they are dissolved, the possibilities of improved therapeutics in certain diseases do not seem to be too far distant.

ACTION OF ANTISEPTICS IN MICE

It has long been recognized⁴ that the phenol coefficient as determined by routine in vitro technics is not a reliable index to the therapeutic usefulness of surgical antiseptics. A promising method of in vivo titration, however, has been recently suggested by Hunt.⁵ By this method 0.1 cc. of a 50 per cent dilution of a twenty-four hour broth culture of an "invasive strain" of *Staphylococcus aureus* is injected intracutaneously into a mouse. The hypodermic needle is dipped in India ink before injection in order to leave a permanent tattoo mark at the site of the injection. In untreated mice such an injection usually causes a local inflammatory reaction from 3 to 10 mm. in diameter, with subsequent suppuration, necrosis, scab formation, desquamation and spontaneous healing. The antiseptic solutions to be titrated are injected as aqueous solutions twenty times the minimum concentration necessary to kill staphylococci within ten minutes in the test tube. The dose is usually 0.1 cc. of the antiseptic injected through the permanent tattoo mark on the skin. "Disinfectant I" (chlor-iso-octyl-resorcinol) has a test tube phenol coefficient of 1,800 when dissolved in distilled water, reduced to 500 in the presence of 1 per cent serum. In Hunt's hands a 1:5,000 dilution of this octyl resorcinol was able to prevent the formation of the skin lesion in mice if administered at the same time at which the area was infected with staphylococci. Given one hour after microbial injection, however, even a 1:1,000 dilution of this disinfectant was able to prevent the formation of the skin lesion in only one out of four mice. Administered three hours after infection of the skin area it had no demonstrable therapeutic effects. Merthiolate and metaphen in 1:1,000 dilutions were without therapeutic effects even when the antiseptic solution and staphylococci were mixed prior to injection. Mercurochrome, oxyquinolin and chloramine T were equally ineffective.

7 Ikeda K. Lipoid Pneumonia of the Adult Type (Paraffinoma of the Lung) Arch Path 23 470 (April) 1937.
8 Bolduan C F. Lipoid Pneumonia Spec Bul Dept Health City of New York April 1937.
1 Sorensen S P L. Compt rend. trav. lab. Carlberg 1930 18.
No 5.
2 Hewitt L F. Biochem J 30 2229 (Dec) 1936 31 360 (March) 1937.
3 A discussion of this concept may be found in the art. by Victory H B. Yale J Biol & Med 1 595 (March) 1937.
4 Leonard G F. J Infect Dis 18 358 (April) 1931 1112.
5 E J Infect Dis 53 250 (Sept Oct) 1933.
2 Hunt G A. J Infect Dis 60 232 (March April) 1937.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company present the fifth series of network health programs beginning Oct 13, 1937, and running weekly through June 15, 1938. The programs will be presented over the Red network each Wednesday at 2 p m eastern standard time, 1 p m central standard time, 12 o'clock noon mountain standard time and 11 a m Pacific standard time.

The dates and topics of the broadcasts for the coming month are as follows:

Personal Health

October 27—Seeing and Hearing Well: hearing and vision, how to conserve these, how to recognize deviations, how to prevent loss.

November 3—Striving for Better Bodies: so-called physical defects, their recognition, what can be done about them.

Hygiene

November 10—Playing for Fun: health values and hazards in sports and recreation including football.

November 17—Fresh Air, Fresh Clothes and Fresh Skin: ventilation, clothing, bathing.

November 24—Rest, Relaxation, Refreshment: all work and no play, or all play and no rest—bad for health.

The stations on the Red network are privileged to broadcast the program but, since it is a noncommercial program, they are not obligated to do so. Interest on the part of medical societies, women's auxiliaries and others may have weight with program directors of local stations. A personal visit to the program director might be advisable if the program is not being taken by a local station. This is an opportunity for the appropriate committees of county medical societies to indicate their interest in having this program broadcast in their community and to enlist the interest of other groups.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Prohibit Sale of Clams—Supplementing the regular mussel quarantine order of May 26, a quarantine of all clams from the ocean shore of California, extending from the southern boundary of Los Angeles County north to the California-Oregon boundary, with the exception of San Francisco Bay has been established, according to the state health department September 13. This order prohibits the taking, sale or offering for sale of clams gathered in the district specified.

COLORADO

Society News—The Medical Society of the City and County of Denver was addressed, October 5, by Drs Harry Gauss on 'Gastro-Intestinal Symptoms in Disease of the Brain', Luman E Daniels, 'Prevention of Late Neurosyphilis', and Alfred R Masten, 'Tuberculosis Control'. At a recent meeting of the society, Drs Clarence B Ingraham discussed 'Pelvic Tumors', Gerrit Heusinkveld 'Malpositions of the Uterus', and Eugene S Auer, 'Primary Dysmenorrhea'.

Officers of Basic Science Board—At the first meeting of the board of examiners in the basic sciences August 26, Charles F Poe Ph.D., University of Colorado, Boulder, was chosen president, Isaac E Newsom, D.V.S., Colorado Agricultural College Fort Collins, vice president, and Esther B Starks D.O., Denver, secretary treasurer. Other members of the board are Dr Edgar D Downing, Denver and R C Oppenlander, D.C., Sheridan. The bill creating the basic science board was enacted by the thirty-first general assembly and became effective July 1.

DISTRICT OF COLUMBIA

Personal—Dr William A Applegate has retired as chief surgeon of the Southern Railroad, after holding the position thirty-two years. Dr Glenn I Jones, Bethesda, Md, will succeed him.

The Davidson Lecture—Dr Harry A Davis, associate in pathology, University of Tennessee College of Medicine Memphis delivered the Davidson Lecture of the Medical Society of the District of Columbia October 13. Dr Davis was selected on the merit of his essay, submitted in competition, entitled 'Factors in the Production and Treatment of Shock: An Experimental Study'. The lecture was established in 1929 in honor of Dr Edward Young Davidson, who was largely responsible in bringing to completion the society's project of building its own home. It is given in odd numbered years on the second Wednesday in October. In 1936 the executive committee of the medical society decided to place the selection of the lecturer on a competitive basis. Dr Davis graduated from McGill University Faculty of Medicine, Montreal, in 1931.

FLORIDA

District Meeting—The first annual meeting of the North Central Medical District of the Florida Medical Association will be held at the Harrington Hall Hotel in Ocala, October 27. Dr Ralph E Russell, Ocala, president, Marion County Medical Society, will deliver the address of welcome, and officers of the state medical association will be among the speakers. Presenting the scientific program will be Drs Robert D Ferguson, Ocala, on 'Acute Conditions Within the Abdomen', Edward Jelks, Jacksonville, 'Some Experiences in the Diagnosis of Gastro-Intestinal Cancer', and James M Dell Jr, Gainesville, 'Complications Following Cauterization of the Cervix'.

ILLINOIS

Society News—Dr Frederick H Falls, Chicago among other speakers, discussed 'Eclampsia Toxemia' before the Adams County Medical Society, October 11, in Quincy. Drs John T Gernon, Chicago, and Paul H Harmon, Springfield, addressed the Kankakee County Medical Society, Kankakee October 14, on 'Neurogenic Dysfunction of the Bladder' and 'Poliomyelitis' respectively.

Chicago

Public Lecture on Medical Charlatans—Dr Morris Fishbein Editor of THE JOURNAL will deliver a public lecture at Goodman Theater, October 27 under the auspices of the Chicago Medical Society, on 'Modern Medical Charlatans'.

Lectures on Cancer—The Chicago Woman's Club, through its cancer research committee, began a series of public lectures on cancer, October 21, with a talk by Dr William A O'Brien, associate professor of pathology and preventive medicine and public health, University of Minnesota Medical School, Minneapolis. His subject was 'General Aspects of Cancer'. Other lecturers in the series are:

Dr Clark W Finnerud assistant clinical professor of dermatology, Rush Medical College University of Chicago October 28. Skin Cancer.

Dr Gatewood clinical professor of surgery Rush Medical College November 4. Cancer of the Digestive Tract with Special Reference to the Stomach and Rectum.

Dr Frank L Rector Evanston Ill field representative American Society for the Control of Cancer What Comprises Adequate Facilities for the Care of Cancer Patients.

Society News—At the annual joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine, October 25, at the Palmer House, Sewall Wright D.Sc., Ernest D Burton distinguished professor of zoology, University of Chicago, will speak on 'The Hereditary Factor in Abnormal Development'. Dr Edward L Jenkinson, among others addressed the Chicago Roentgen Society, October 14, on 'Cholecystography Before and After Medical Management'. At a meeting of the Chicago Pathological Society, October 11, the speakers included Drs Arthur Weil and Erich Liebert, Chicago, and Gert Heilbrunn, Elgin, on 'The Histopathology of the Brain in Experimental Hyperinsulinism'. The Chicago Society of Allergy was addressed October 18 by Drs Tell Nelson on 'A Sheep Antibody to Pollen Which Blocks the Prausnitz-Kustner Reaction' and Paul Tachau on 'Eczema and Similar Dermatoses in Infancy and Childhood'. Dr Charles F McKhann assistant professor of pediatrics and communicable diseases Harvard University Medical School Boston, addressed the Chicago Pediatric Society, October 19, among other speakers, on 'Cross Infections in an Infant's and Children's Hospital'.

INDIANA

Society News—Dr John De J. Pemberton, Rochester, Minn., addressed the Tippecanoe County Medical Society in Lafayette, September 14, on "Cancer of the Rectum and Rectosigmoid"—Dr James O. Ritchey, Indianapolis, discussed undulant fever before the Jasper-Newton County Medical Society in Rensselaer, September 30—At a meeting of the Wabash County Medical Society in North Manchester, September 15, Dr John H. Warvel, Indianapolis, discussed "Diabetes Mellitus in Children and Protamine Zinc Insulin"—Dr Louis H. Segar, Indianapolis, addressed the Gibson County Medical Society in Princeton, September 13, on "Preventive Medicine in Children"—Dr Maxwell M. Wintrobe, Baltimore, addressed the Indianapolis Medical Society, October 19, on "Diagnosis and Treatment of Anemias"—Dr Max A. Bahr, Indianapolis, addressed a joint session of the society and the Indianapolis Bar Association, October 12, on "The Psychological Aspect of Crime"

IOWA

Personal—Dr Benjamin E. Jones, Davenport, has retired as supreme medical director of the Modern Woodmen of America, after thirty-four years in the position

Society News—At a meeting of the Linn County Medical Society in Cedar Rapids, September 14, Drs Edward William A. Ochsner, New Orleans, discussed "Treatment of Peptic Ulcer Based on Physiologic Principles," and Edward H. Ochsner, Chicago, "Treatment of Septic Infections"—Dr Joseph Norman Bickert, Cedar Rapids, also spoke—A symposium on venereal diseases was presented before the Des Moines Academy of Medicine and Polk County Medical Society, September 28, by Drs Thomas P. Bond, Julius S. Weingart and Walter L. Bierring

LOUISIANA

Society News—The Tri-Parish Medical Society was addressed in Tallulah, August 3, by Drs Ralph J. Talbot, Monroe, on "Respiratory Difficulties of the New-Born", Isadore Dyer, New Orleans, "Practical Points in Prenatal Care and Management of Prenatal Complications" and "Venereal Disease Control"—At a meeting of the Bi-Parish Medical Society in Jackson recently Dr Richard W. Young, Baton Rouge, read a paper on "Artificial Pneumothorax."

Tuberculosis Institute—A tuberculosis institute will be held at the Hutchinson Memorial Building, Tulane University, New Orleans, November 22-23, under the auspices of the Tuberculosis Committee of New Orleans, the Orleans Parish Medical Society and the Louisiana State Tuberculosis Association. Drs Fred H. C. Heise, medical director of Trudeau Sanatorium, Trudeau, N. Y., and John B. Hawes II, Boston, director of the Rutland (Mass.) Cottage Sanatoria, will conduct the institute. Clinical demonstrations will be held in the afternoons and the diagnosis and treatment of tuberculosis will be discussed in the evenings

MAINE

Society News—At a recent meeting of the council of the Maine Medical Association, a special committee for furthering graduate education was appointed. The members are Drs Frederick T. Hill, Waterville, chairman, Julius Gottlieb, Lewiston, and Norman H. Nickerson, Greenville—Dr Richard B. Cattell, Boston, among others, addressed a joint meeting of the Penobscot, Somerset, Kennebec and Piscataquis county medical associations at Kineo recently. His subject was "Diagnosis and Management of Surgical Lesions of the Colon and Rectum"—Dr Herbert R. Kobes, Augusta, addressed the Aroostook County Medical Association in Houlton recently on "Statewide Program for the Maine Crippled Child"

MASSACHUSETTS

Changes in State Health Department—Dr Roy F. Feemster, Boston, has been appointed director of the state division of communicable diseases, succeeding Dr Gaylord W. Anderson, who resigned to become professor of public health at the University of Minnesota Medical School. Dr Anderson's post as deputy health commissioner will be taken by Dr Alton S. Pope, Boston, who will continue in his present capacity as director of the division of tuberculosis. Dr Feemster graduated at the Johns Hopkins University School of Medicine, Baltimore, in 1924

Society News—Dr Ralph M. Tovell, Hartford, Conn., addressed the Franklin District Medical Society in Greenfield, September 14, on "Anesthesia in Present Day Practice"—Dr John B. Hawes II, Boston, addressed the society recently

on "Dust and Its Effect on the Lungs" and the Berkshire Medical Society, Pittsfield, on "Relation of Industrial Dusts to Disease"—At a meeting of the Pentucket Association of Physicians, September 16, Dr Joel E. Goldthwait, Boston, spoke on "The Problem of the Arthritic"—The Four Courts Medical Society was addressed at Northampton, September 16, by Drs Channing Frothingham, Boston, on "How Shall We Meet Present Trends in Medicine?", Paul M. Ashton, Springfield, "Practical Use of Endocrines in Gynecology," and Stanley C. Cox, Holyoke, "Traumatic Surgery"

MICHIGAN

Society News—At an all day joint meeting of the Wayne County Medical Society and the Michigan Tuberculosis Association in Detroit, October 11, the speakers were, among others, Dr John Hargreaves Harley Williams, medical commissioner of the National Association for the Prevention of Tuberculosis, London, England, "Fifty Years of Tuberculosis Control in England," and Philip P. Jacobs, Ph.D., New York, "Tuberculosis Control or Eradication—What's Ahead?"—Charles Sheard, Ph.D., Rochester, Minn., addressed the Detroit Physiological Society, October 7, "The Control of Loss of Heat from the Body"

Conferences on Tuberculosis—A series of graduate conferences on tuberculosis will begin at the Herman Kiefer Hospital, Detroit, October 27, when Dr Kendall Emerson New York, will discuss "Present Trends in Tuberculosis." Others in the series include

Dr Eugene L. Opie, New York, Importance of Directing the Child and the Young Person Against Tuberculosis
Dr James N. Baker, Montgomery, Ala., The Role of the Private Physician in Tuberculosis Case Finding
Dr John B. Hawes II, Boston, The Care of the Patient After the Sanatorium
Dr Don M. Griswold, Albany, N. Y., Factors in the Control of Tuberculosis
Dr George G. Ornstein, New York, The Pathogenesis of Pulmonary Tuberculosis from the Physician's Point of View

Changes at Wayne University—New appointments to the staff of Wayne University School of Medicine, Detroit, include the following

Arthur H. Smith, Ph.D., professor and head of the department of physiologic chemistry
Dr Gabriel Steiner, research professor of neurology and neuropathology
Dr Loren W. Shaffer, professor of dermatology and syphilology (part time)
Dr Parker Heath, professor of ophthalmology (part time)
Dr Don W. Gudakunst, professor and chairman of the department of preventive medicine and public health (part time)
Dr Carey P. McCord, professor of industrial hygiene (part time)
Henry F. Vaughan, D.P.H., professor of public health administration (part time)
Dr James M. Winfield, associate professor of surgery
Dr James L. Wilson, associate professor of pediatrics
Dr Richard M. Johnson, assistant professor of medicine
Arthur J. Derbyshire, Ph.D., in charge of neuro-anatomy
James M. Orten, Ph.D., assistant professor of physiologic chemistry
William M. Witheridge, M.S., assistant professor of industrial hygiene and occupational diseases (part time)

MINNESOTA

Personal—On his retirement after ten years as superintendent of the Minnesota School for Feeble-minded at Iarbaul, Dr James Moorhead Murdoch was presented with a gold watch by the Minnesota State Board of Control and other medical superintendents, according to the *Journal-Lancet*.—A plaque was placed in the Orono Town Hall at Lake Minnetonka, September 27, by the Woman's Club of Crystal Bay, in honor of the late Dr William M. Newhall, Long Lake

MISSOURI

Clinical Meeting—The St. Joseph Clinical Society began a series of all day programs, September 21, in St. Joseph. The new set up includes one or two of these all day sessions during the winter and fall in addition to the regular two day program which is an annual spring event of the society. Guest speakers at the first meeting were Drs John S. Lund, Rochester, Minn., and Daniel Lertz Sexton, St. Louis. The following program was offered

Dr Ora E. Whitsell, St. Joseph, Diagnosis and Treatment of Thrombophlebitis and Thrombosis of the Lateral Sinus
Dr Horace W. Carle, St. Joseph, Subacute Bacterial Endocarditis
Dr Jacob Kulowski, St. Joseph, Differential Diagnosis of Bacterial
Dr John H. Ryan, Maryville, Diagnostic Encephalography
Dr Sexton Clinical Application of Ovarian Therapy
Dr Frederick Gregg Thompson, St. Joseph, Clinical Treatment of America
Dr William E. B. Hall, St. Joseph, Deaths in Tetanus—The Importance of Toxin Release
Dr Lund, Intravenous Therapy

Society News—At a meeting of the Cass County Medical Society in Harrisonville, September 16, the speakers included Drs William Beckman, Strasburg, on "Trigeminal Neuralgia" Linn J Schofield, Warrensburg, "The Doctor in Literature" and George Wise Robinson Sr, Kansas City "The Problems of Mental Health"—The St Louis Medical Society was addressed September 28 by Drs Thomas P Findley Jr on "Management of Edema", William E Leighton A Single Trauma as an Etiologic Factor in Cancer, and Charles F Sherwin, "Principles of Safety in the Treatment of Appendicitis"—Dr Manning E Grimes, St Joseph, discussed "Adaptability of the Various Anesthesias in General Surgery and Obstetrics" before the Buchanan County Medical Society in St Joseph, October 2—Dr Logan Clendenning Kansas City, discussed "The Great Hospitals, Their Past and Their Clinicians" before the Jackson County Medical Society, September 14

MONTANA

Personal—Dr Peter Potter, Butte was guest of honor at a banquet, September 23, given by the Silver Bow County Medical Society, to mark his retirement from practice, November 1 Dr Potter has been president of the Murray Hospital in Butte for many years and has been president of the Butte Chamber of Commerce since 1929

NEBRASKA

Society News—At a meeting of the Southwestern Nebraska Medical Society in McCook, September 16, the speakers were physicians from Denver Drs Osgood S Philpott on "Commonly Encountered Skin Conditions" Vernon G Jeurink "Rectal Fistula", Joseph E A Connell, "Fractures of the Femur," and Samuel B Potter, "Subinvolution of the Uterus"—Speakers before the Omaha-Douglas County Medical Society, Omaha, September 28, were Drs Howard K Gray, Rochester, Minn, on "Pathologic Physiology of the Biliary Tract and Its Relation to Surgery", John Harry Murphy, "Childhood Tuberculosis in Omaha", George E Robertson John Harry Murphy and Herman M Jahr, preliminary report on poliomyelitis patients treated in the county hospital

NEW JERSEY

The Third Annual Martland Lecture—The third annual Harrison S Martland Lecture will be delivered at the Academy of Medicine of Northern New Jersey, November 23 under the auspices of the Essex County Pathological and Anatomical Society The essayist this year will be Dr Harrison S Martland, Newark, who will speak on "Effects of Poisons" This society established the lecture in 1935 in honor of Dr Martland who is professor of forensic medicine at New York University College of Medicine and medical examiner of Essex County

NEW YORK

Society News—Dr Morris Fishbein, Chicago Editor of THE JOURNAL, addressed the Oswego County Medical Society, Oswego October 14, on "Medicine and National Policies"—Dr Byrl R Kirklin Rochester, Minn addressed the Broome County Medical Society, Binghamton October 20 on "Diseases of the Intestinal Tract"—Drs Will Cook Spain New York and George Flamm, Brooklyn, addressed the Medical Society of the County of Westchester, October 19, at Grasslands Hospital, Valhalla, on "Bacterial Allergy" and "Pollen Allergy" respectively

District Meetings—The annual meeting of the Eighth District Branch of the Medical Society of the State of New York was held in Olean October 7, with the following speakers among others Drs Francis F Schwentker, Baltimore, on "The Use of Sulfanilamide in the Treatment of Infections" Cameron Haight, Ann Arbor, Mich, "Practical and Interesting Phases of Thoracic Surgery" and Charles H Goodrich Brooklyn, president of the Medical Society of the State of New York, "Preventive Medicine"—At the annual meeting of the Fifth District Branch of the Medical Society of the State of New York in Lowville, September 23, the speakers included Drs John C McChintock and George E Beilby, Albany on "The Problem of Simple Goiter", Herman E Pearce Jr Rochester, "Management of Peripheral Vascular Disease" and Roscoe C Borst, Utica, "Management of Urinary Lithiasis"

Dr Ramsey to Succeed Dr Nicoll in Westchester County—Dr George H Ramsey, assistant commissioner for preventable diseases in the New York State Department of Health, Albany, has been appointed commissioner of health

of Westchester County to succeed Dr Matthias Nicoll Jr, White Plains, who will retire on reaching the age of 70 in the spring Dr Ramsey graduated at Columbia University College of Physicians and Surgeons New York in 1917 and later received a degree in public health at Johns Hopkins University School of Hygiene and Public Health He spent several years with the Michigan State Department of Health and from 1926 to 1933 was on the faculty of Johns Hopkins Dr Nicoll became health commissioner of Westchester County in 1930 after having served as state health commissioner for seven years Previously he had been deputy state commissioner for six years and had also served in the New York City Department of Health He graduated from Columbia University College of Physicians and Surgeons in 1892

New York City

Personal—Dr Florence R Sabin of the Rockefeller Institute for Medical Research received the honorary degree of doctor of science, October 8, from Oberlin College, Oberlin Ohio, on the occasion of its centennial observance of the beginning of college education for women and of coeducation

Ordinance Forbids Loud Playing of Radio—New York city has recently made effective an ordinance which forbids the playing of any radio, phonograph or musical instrument in a manner or with such volume, particularly between 11 p m and 7 a m, as to annoy or disturb the quiet comfort or repose of persons in any dwelling, hotel or other type of residence

Graduate Work at New York University—In his annual report issued recently Dr Currier McEwen, assistant dean of New York University College of Medicine, pointed out that graduate education had been developed during the year in the form of short courses and also of courses leading to advanced degrees Three candidates received the degree of doctor of medical science at the June commencement Work toward degrees was done in the departments of forensic medicine, medicine, obstetrics and gynecology, ophthalmology, otorhinolaryngology, radiology and surgery

New Chronic Disease Hospital—Mayor La Guardia laid the cornerstone, October 5, of the partly completed Hospital for Chronic Diseases on Welfare Island Speakers at the ceremony besides the mayor were Dr Willard C Rappleye dean of the College of Physicians and Surgeons of Columbia University, Homer Folks secretary of the State Charities Aid Association, Charles C Burlingham, president of the Welfare Council of New York, and Dr Sigismund S Goldwater, commissioner of hospitals for the city The new hospital, which will cost \$7,000,000 consists of four pavilions for patients, an administration building, a nurses home and a power plant

Medal to Be Awarded for Cancer Education—The New York City Cancer Committee will award the first Clement Cleveland Medal for outstanding educational work in cancer control during the year at a dinner October 27 at the Town Hall Club Dr John C A Gerster, chairman of the committee will preside at the dinner and the speakers will be Dr Stanley P Remmin, Philadelphia Mr Harford Powell Mrs Robert G Mead and Dr Francis Carter Wood Dr Cleveland who died April 16, 1934 at the age of 90 was for many years surgical director of the Woman's Hospital and on the staff of Memorial Hospital for the Treatment of Cancer and Allied Diseases He was a vice president of the American Society for the Control of Cancer in 1922 and had served as president of the New York Obstetrical Society and the American Gynecological Association Members of the award committee are Mrs Mead and Drs George Emerson Brewer, Gerster and Wood The winner of the medal has not been announced

NORTH DAKOTA

Personal—Dr George Alfred Dodds San Haven has been appointed superintendent of the North Dakota State Tuberculosis Sanatorium at San Haven for a two year term to succeed Dr Charles MacLachlan

OHIO

Mr Hooper to Superintend General Hospital—Henry N Hooper recently business manager of the Georgia Warm Springs Foundation has been appointed superintendent of the Cincinnati General Hospital Dr Alfred Friedlander who has been serving as superintendent in addition to his work as dean of the University of Cincinnati College of Medicine will now be chief of the medical staff in charge of all medical and educational work of the hospital

Institute on Syphilis at District Meeting—A meeting of the Fifth District Medical Society in Cleveland, October 8, was devoted to an institute on syphilis. Clinics were conducted in the morning and early afternoon at Lakeside Hospital. Later came a round table discussion on diagnosis and treatment of transmissible syphilis, led by Drs Robert E Barney, Earle Netherton and Clyde L Cummer, and a showing of the sound motion picture on syphilis prepared by the American Medical Association and the U S Public Health Service. At an evening meeting under the auspices of the Academy of Medicine of Cleveland Dr Raymond A Vonderlehr, in charge of the division of venereal disease U S Public Health Service, Washington, D C, spoke on 'Public Health Control of Syphilis' and Dr Joseph Earle Moore, Baltimore, 'Treatment of Nervous System Syphilis'.

Society News—Drs Max M Zinninger and Tom D Spies, Cincinnati, addressed the Stark County Medical Society, Canton, September 14, on "Diagnosis and Surgical Treatment of Lesions of the Bile Ducts" and "Diagnosis of Pellagra" respectively.—Drs Charles W Pavey, Columbus, and James V Seids, Cleveland, were the speakers at a meeting of the Sixth Council District Medical Society at Millersburg, September 15, on 'Eclamptic Convulsions' and 'Gallbladder Disease' respectively.—Dr George W Crile, Cleveland, addressed the Summit County Medical Society, Akron, September 14, on 'Clinical Problems of Essential Hypertension'.—Dr Alfred W Adson, Rochester Minn, addressed a joint meeting of the Mahoning County Medical Society, the Cleveland Oto-Laryngological Club and the Pittsburgh Oto-Laryngological Society in Youngstown, September 29, on "Neurological Complications of Sinus and Mastoid Infections". Dr Louis J Karnosh, Cleveland addressed the Mahoning County society, September 21, on 'Three Mileposts of Modern Psychiatry: Fever Treatment, Vitamin Therapy in Deficiency Diseases, and Insulin Shock for Dementia Praecox'.—Dr Thomas F Ross, Columbus, addressed the Ross County Medical Society, Chillicothe, September 1, on 'Toxemias of Pregnancy'.

OKLAHOMA

Professor of Orthopedic Surgery Appointed—Dr Paul C Colonna, clinical professor of orthopedic surgery, New York University College of Medicine, has been appointed professor of orthopedic surgery at the University of Oklahoma School of Medicine, Oklahoma City. He will have charge of the orthopedic services at the University Hospital and the Crippled Children's Hospital. Dr Colonna graduated from Johns Hopkins University School of Medicine, Baltimore, in 1920. In New York he has been associate orthopedic surgeon to the Hospital for Ruptured and Crippled and Bellevue Hospital.

PENNSYLVANIA

Society News—Dr Samuel S Allen Jr, Pittsburgh, addressed the Cambria County Medical Society, Johnstown, October 14, on "Head Injuries".—Dr Eldridge L Eliason, Philadelphia, addressed the Lebanon County Medical Society, Lebanon, October 12, on "Surgical Conditions of the Biliary Tract".—Dr Harry M Margolis, Pittsburgh, addressed the Indiana County Medical Society, Indiana, September 23, on "Management of the Chronic Arthritic Patient".—Dr Cortlandt W W Elkin, Pittsburgh, addressed the McKean County Medical Society, Bradford, September 21, on 'Some Medical Aspects of Gallbladder Disease'.

Institute on the Exceptional Child—The fourth annual Institute on the Exceptional Child, sponsored by the Child Research Clinic of the Woods Schools, Langhorne, will be held October 26, with the following program:

Dr Louis A Lurie, Cincinnati, Endocrinology as It Relates to the Understanding and Treatment of the Exceptional Child
Dr Fritz B Talbot, Boston, The Present Status of Mongolianism
Dr Paul F Schilder, New York, Psychological Implications of Motor Development in Children
Esther Lloyd Jones, Ph D, New York, Training Opportunities for Workers with Exceptional Children

Dr Baldwin L Keyes, Philadelphia, will preside at the morning session and Edgar A Doll, Ph D, Vineland, N J, at the afternoon meeting.

Philadelphia

Society News—At the first fall meeting of the Philadelphia County Medical Society, September 22, forty-nine physicians of the First Council District received certificates honoring them for fifty years or more of medical practice.—Two James M Anders lectures were delivered before the College of Physicians of Philadelphia October 6 by Henry C Sherman, Ph D, New York, on 'Optimal Nutrition as a Scientific Concept' and

an Economic Problem' and Charles Edward A Winslow, Ph D, New Haven, Conn, 'Housing and Health'.—Andrew J Ramsay, Ph D, and Dr James F McCaher addressed the Obstetrical Society of Philadelphia, October 1, on "Anatomical Distribution of the Rete Ovarii in Normal Ovaries" and "A Consideration of the Rete Ovarii with Relation to Male Secondary Sex Characteristics in Women" respectively.—Among speakers before the Philadelphia Academy of Surgery, October 4, were Dr Isidor S Ravdin, Samuel Goldschmidt, Ph D, and Harry M Vars, Ph D, on 'Factors Conditioning the Occurrence or Liver Necrosis Following the Use of Volatile Anesthetics'.

Faculty Changes at University of Pennsylvania—Dr Earl D Bond has been appointed vice dean for psychiatry in the Graduate School of Medicine of the University of Pennsylvania and Detlev W Bronk, Ph D, to a similar position in neurology. Dr Bond is professor of psychiatry at both schools of medicine at the university and Dr Bronk is professor of neurology in the graduate school and Eldridge Reeves Johnson professor of biophysics in the school of medicine. Dr Leon Herman has been appointed professor of urology in the graduate school and Dr John H Jopson retires with the rank of emeritus professor of surgery. Other changes include:

Dr Eugene P Pendergrass, professor of radiology
Dr Joseph C Yaskin, clinical professor of neurology
Dr John P Scott, associate professor of pediatrics
Dr Albert E Bothe, assistant professor of urology
Dr Robert A Kimbrough Jr, assistant professor of obstetrics
Dr Jesse T Nicholson, assistant professor of obstetrics

In the University of Pennsylvania School of Medicine the changes include:

Dr Roy G Williams, associate professor of anatomy
Dr Alexander G Fewell, associate professor of ophthalmology
Dr Benjamin F Baer Jr, associate professor of ophthalmology
Dr William F Moore, assistant professor of clinical bronchoscopy and esophagoscopy
S Culver Williams, Ph D, assistant professor in anatomy
Harry E Morton, Sc D, assistant professor in bacteriology
Dr Thomas C Kelly, assistant professor in pediatrics
Dr Herman Beerman, assistant professor in dermatology and syphilology
Dr Wilfred E Fry, assistant professor in ophthalmology
Maximilian Ehrenstein, assistant professor of chemistry

SOUTH CAROLINA

Society News—Dr Paul H Culbreath Jr, Ellenton, among others, addressed the Ridge Medical Society in Batesburg, August 16, on congenital hemolytic jaundice.—Drs Leo F Hall and George C Battle, State Park, addressed the Kershaw County Medical Society at the South Carolina Tuberculosis Sanatorium, State Park, July 14, on 'Phrenic Nerve Interruption in Tuberculosis' and "Intrapleural Pneumolysis" respectively.

Specialty Society Meetings—The Urological Association of South Carolina held its annual meeting in Columbia, October 13, with the following speakers at an afternoon session: Drs Stephen W Davis, Charlotte, N C, on 'Fever Therapy in the Treatment of Gonorrhea'; Paul W Sanders Jr, Charleston, 'Acute Suppurative Nephritis'; Mordecai Nachman, Greenville, 'Management of Urologic Conditions in Children'. In the evening session the speakers were Drs Jefferson C Pennington, Nashville, Tenn, on 'Management of Calculi in the Upper Urinary Tract' and Edgar G Ballenger, Atlanta, 'Management of Tumors of the Bladder, Both Benign and Malignant'.—Dr Isaac A Abt, Chicago, was the guest speaker at a meeting of the South Carolina Pediatric Society in Columbia, October 11. He spoke at an afternoon session on 'History of the Vitamins' and at an evening meeting with the Columbia Medical Society on 'Management of the New Born Infant'.

VIRGINIA

Society News—Speakers at the first fall meeting of the Richmond Academy of Medicine, September 28, were Dr Richard H Overholt, Boston, on 'The Surgical Treatment of Primary Carcinoma of the Lung'; Marshall P Gordon Jr, Richmond, 'Sulfanilamide in the Treatment of Gonorrhea'; and Dean B Cole, Richmond, 'Twelve Years' Experience in the Use of Iodized Oil'.

Pediatric Clinician Appointed—Dr Robert B Hightower, Boston, has been appointed clinician in pediatrics in the department of clinical and medical education of the Medical Society of Virginia to succeed Dr Jay M Arena, resigned. Dr Hightower was graduated from the University of Virginia Department of Medicine in 1932 and has recently been resident at the Children's Hospital, Boston. He will come to Virginia December 1. Dr Arena is now on the faculty at Duke University School of Medicine, Durham, N C.

WASHINGTON

Public Health Officers—Dr Cecil R Fargher, Wenatchee health officer of Chelan County, was elected president of the Washington State Public Health Association September 11, at its annual meeting in Tacoma. Dr Fargher succeeds Dr Samuel M Creswell, health officer of Tacoma. Roy M Harris, state health engineer, was named secretary.

Society News—Drs Thomas D Thompson and Alfred O Adams addressed the Spokane County Medical Society, Spokane, September 9, on 'Injuries About the Ankle Joint' and 'The Technic of Transplanting Split-Thickness and Full-Thickness Skin Grafts' (motion picture) respectively.—The King County Medical Society was addressed October 4 by Drs Delbert H Nickson, Seattle, on 'Salivary Gland Tumors and Kenneth K Sherwood Kirkland 'Neuritis and Vitamin B Therapy.' The society was addressed September 20 by Dr Arthur E Wade, Seattle, on 'School Medicine in Relation to Private Practice' and Dr Walter Raymond Jones Seattle, 'Local Immunity in Gonorrhea Its Relation to Cure.' Dr William W Bauer, director, Bureau of Health and Public Instruction American Medical Association Chicago will be the speaker, October 25, on 'The Place of the Doctor in the Community Health Program'.

GENERAL

The Edward A Filene Will—According to the New York Times the Good Will Fund, recently incorporated charitable and educational foundation receives the major share of an estate exceeding \$2,000,000 under the will of the late Edward A Filene, Boston. The fund was pledged to research and education, to further the welfare of mankind improvement of health conditions for workers improvements in medical care and research, and education concerning causes of poverty.

Study of Environmental Factors in Leprosy—The Leonard Wood Memorial (American Leprosy Foundation) announces that Dr George M Saunders Kingston Jamaica, B W I recently director of the Laws Commission of the British West Indies under the auspices of the Rockefeller Foundation, has been appointed to make a special world-wide study of the environmental factors that affect the lives of lepers and that might assist in the treatment of the disease. The memorial is seeking additional funds to carry on this enlarged study.

Bequests and Donations—The following bequests and donations have recently been announced:

Mount Sinai Hospital New York \$196,102 under the will of Mrs Amelia A Meyers for a new building or a semiprivate pavilion. Montefiore Hospital and the United Hospital Fund are to receive remainder interests in \$50,000 and \$40,000 trusts respectively.

Harlem Eye Ear and Throat Infirmary New York \$1,500 by the will of Carrie E Karstens.

Johns Hopkins University and Johns Hopkins Hospital Baltimore \$50,000 Hospital for Women of Maryland \$5,000 Hospital for Consumptives at Towson Md \$10,000 by the will of Miss Amelia Marburg.

Jewish Hospital Philadelphia \$10,000 through the Federation of Jewish Charities to endow a bed. Eaglesville Sanitarium for Consumptives \$5,000. St. Luke's and Children's Hospital and St. Christopher's Hospital for Children Philadelphia Children's Seashore House Atlantic City N J \$1,000 each. Children's Heart Hospital Skin and Cancer Hospital Philadelphia \$500 each by the will of the late Joseph Wasserman.

Lincoln General Hospital Lincoln Neb \$200,000 in cash and the income from the residue of an estate valued at more than one and a half million dollars.

Norwalk Memorial Hospital Norwalk Ohio \$5,000 by the will of the late Mrs C A Lull.

St. Luke's Hospital New York an interest valued at \$95,447 in the estate of the late Dr Edward B Dench.

Society News—Abel Wolman, chief engineer Maryland State Department of Health Baltimore was chosen president-elect of the American Public Health Association at its annual meeting in New York, October 5-8 and Dr Arthur T McCormack, Louisville Ky, was inducted into the presidency. Vice presidents elected were Drs John L Rice New York John T Phair Toronto Ont, and Domingo Ramos Havana, Cuba. The next meeting will be in Kansas City Mo.—Officers elected at the annual session of the American Congress of Physical Therapy in Cincinnati September 20-24 are as follows: Drs Frank H Kruseh Rochester Munn president-elect William H Schmidt Philadelphia Nathan H Palmer New Orleans, Fred B Moor, Los Angeles Kristian G Hansson New York and Miland E Knapp, Minneapolis all vice presidents and Richard Kovacs New York secretary.—Dr Edward A Meyerding St Paul was elected president of the Mississippi Valley Conference on Tuberculosis at its twenty-fourth annual meeting in Dayton Ohio September 23-25. Mrs Theodore B Sachs Chicago director of the Chicago Tuberculosis Institute was made vice president and Mr A W Jones St Louis, was renamed secretary.

FOREIGN

Society News—The sixth International Congress of Radiology will be held in Berlin in 1940, it was decided at the recent congress in Chicago. Dr Hermann Holthusen, Hamburg, Germany, was elected president for the next congress.

Americans on Gastro-Enterology Program—At the second International Congress on Gastro-Enterology in Paris, September 13-15, the following American physicians participated in discussions, among others: Drs Joseph Felsen Henry A Rafsky, Max Einhorn, Roy Upham Anthony Bassler Samuel Weiss, all of New York. Max Thorek and Rudolt Schindler, Chicago. Daniel N Silverman and Abraham L Levin New Orleans. Solomon Ben-Asher, Jersey City, N J, and Hyman I Goldstein, Camden, N J.

Congress of Obstetrics and Gynecology—Subjects for discussion at the International Congress of Obstetrics and Gynecology to be held in Amsterdam, May 4-8, 1938, are announced as follows: eclampsia, thrombosis and embolism and hormones. These will be discussed at the morning meetings and afternoons will be devoted to papers on a variety of subjects. Contributions to the program may still be accepted according to an announcement from the secretary, Dr F C van Tongeren, University Clinic for Obstetrics and Gynecology Amsterdam, W, Holland. Dr A H M J van Rooij, Amsterdam, is president.

CORRECTION

Young & Rubicam Not Concerned in Cutasy Laboratories, Inc.—In THE JOURNAL for October 2, page 1142, appeared a statement to the effect that 'Mr John Orr Young, president and treasurer of the Cutasy Laboratories, Inc., is also president of Young & Rubicam, Inc., an advertising agency.' This statement is incorrect. Mr John Orr Young has not any business connection with, or financial interest in, the firm of Young & Rubicam, Inc. He ceased to be president in June 1927.

Government Services

New York Free from Bovine Tuberculosis

The state of New York was officially designated by the U S Department of Agriculture as a modified accredited area, indicating its practical freedom from tuberculosis of cattle, October 1. New York is the forty-sixth state in which all counties are in the modified accredited status, indicating that bovine tuberculosis has been reduced to less than 0.5 per cent as shown by the tuberculin test. According to a release from the department of agriculture there are no counties east of South Dakota that have not been placed in this classification, and only one other state California in which there are any nonaccredited counties. The eradication of bovine tuberculosis was begun in New York in 1919 and the first county, Essex, was designated as a modified accredited area in 1924. Since that time some counties have been added to the list almost every year, but during the calendar year 1937 twenty-six counties were added. Oneida being the last county.

Dr Hektoen to Be Director of Advisory Cancer Council

Dr Ludwig Hektoen, Chicago, has been appointed executive director of the National Advisory Cancer Council. It was announced October 16. The council was recently organized in conformity with the National Cancer Institute Act which provides for the erection and administration of a national cancer institute at Bethesda Md. The law also provides for the expenditure of \$700,000 annually in the campaign against cancer. The new cancer institute will function as a division of the U S Public Health Service in the National Institute of Health. It will be the liaison corps for the nation between all official and voluntary participants in the fight on cancer. With the approval of the advisory council it is hoped that the significant researches carried on in the institute of health for the past several years under the direction of Dr Carl Voegtlin will be expanded and improved. Dr Roscoe R Spencer, senior surgeon U S Public Health Service known for his work on Rocky Mountain spotted fever, will assist Dr Hektoen on matters of administration of the new project. The personnel of the advisory council was announced in THE JOURNAL October 16, page 1287.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept 25, 1937

Health Campaign Launched by the Prime Minister

A national campaign to encourage the wider use of the health services is being organized by the Central Council for Health Education with the cooperation of the Ministry of Health and the board of education. It will be officially launched by the prime minister and will be continued for six months. The minister of health and the president of the board of education have issued the following joint message to the local authorities: Over a number of years and particularly in the last three decades, the government, the local authorities, voluntary organizations and workers, and the medical and allied professions, have been building up a network of health services. But we should not be justified in resting on our oars. The prospective beneficiary, too, has his or her part to play. Some of the services are not being used to the extent which we should desire, and the help of the family doctor and of the diagnostic and treatment facilities at his disposal is often invoked too late. For this reason the prime minister is launching a national campaign to appeal to all, and especially to parents and others who have charge of children, to see that every one has the fullest opportunity of benefiting by the numerous health facilities at his call. The authorities hope for the cooperation of all men of good will. The month of October will be used to arouse public interest in the health services in general, and health weeks and exhibitions will be arranged. In November and December increased use of the services available for mothers and children will be urged. In January the object will be increased support for the school health service, to encourage parents to make greater use of the milk in schools scheme and to pay greater attention to the advice of the school doctor and dentist. In February wider use of the facilities available for adolescents and adults, particularly those relating to tuberculosis and venereal disease, will be urged. March will be devoted to the facilities for physical training and recreation. Extensive use will be made of posters and films.

The board of education has published two handbooks entitled "Recreation and Physical Fitness for Girls and Women" and "Recreation and Physical Fitness for Youths and Men." The books have been compiled in accordance with the board's new policy on physical education, a chief element of which is insistence on the provision in schools of better means of exercise and on the acquisition of playing fields with appointment of instructors. The handbooks are excellent for their purpose and combine the strategy and tactics of physical culture with experience in a way which has not previously been available. It is insisted, to begin with, that enthusiasm for fitness must exist in those seeking it and must make itself effective through leadership. In a foreword Sir Arthur MacNalty, chief medical officer of the board of education, says: "It is essential for the leaders of youth to appeal to the young men around them to take a pride in becoming physically fit. At the same time one part of the body should never be developed at the expense of another, and the body should never be developed at the expense of the mind and spirit. The Greek ideal was a balanced rhythm of life, a golden mean, and excess whether of study or gymnastics, is disharmony and to be avoided." He urges that all depends on the leader, who must concern himself with the spirit which pervades the whole meeting. In the book for youths and men the exercises are divided into three groups: free standing and floor exercises with a bite in them, stronger exercises, some of them with apparatus—jumping, vaulting and agility exercises. The teaching and organization of team ball games national

team games, general athletics, swimming, dancing, boxing, climbing and wrestling are fully dealt with. A chapter on camping reflects the popularity just now of camping holidays.

The Health of the Medical Student

It is curious that, while so much has been done to promote health, the unhealthy conditions under which the medical student often works have only recently received attention. The *Lancet* has a long article in its students' number under the caption "Increasing Attention to Be Paid to the Health of Medical Students." It quotes the recent remark of a dean of a medical school: "The student's life makes a great demand on his general health, so that by the time he has held a resident appointment he is liable to fall by the way." At the turn of the century a majority of the housemen of a London hospital broke down with tuberculosis. That this was due to the way they were living rather than to any inherent weakness was shown by the fact that most of them regained health. The circumstances of the medical student's life are peculiarly trying. While most other students graduate after three years and then have a period of relaxation, he has first a preclinical period which, in effect, is graduation in science and then embarks on another period of three years or more in which the risk of infection is added to the ordinary strain of student life. Dr. D. Arcy Hart found that roentgenograms of the chest showed more evidence of progressive tuberculosis in the later than in the earlier years of medical training, and the increase was greater in medical students than in dental and law students. The *Lancet* refers to the fact that young adults who do not react to tuberculin are more susceptible than those who do. This has been shown by Scandinavian experience of nurses. It therefore suggests that students who do not react should be excluded from contact with tuberculosis unless vaccination with BCG will turn them into reactors. Or they might submit to roentgenography of the chest, as is now being done at University College Hospital, London, and on a larger scale by the Royal College of Physicians. As a result of the first examination of 300 students, 232 were told to return in a year, and sixty-three within a shorter time. Four had some restriction placed on their work and one was advised to go at once to a sanatorium. The examination took place last February and up to the present time four cases of progressive pulmonary tuberculosis have been detected.

In a letter to the *Lancet*, Sir Ernest Graham Little (dermatologist and member of Parliament and of the senate of London University) agrees as to the strain on the health of the medical student, entailed by what is practically continuous study for six or seven years without a break, in an atmosphere which too often is unhealthy. He protests against the scandal of a swollen medical curriculum crying out for diminution but actually receiving extension. The new curriculum will make it necessary for the medical student to forego vacations entirely in the last three years—the hospital period in which he is most exposed to infection. At the same time clinical teaching, long the pride of English medicine, has been sacrificed to pseudo-scientific claims.

On the other hand, Mr. Girling Ball (genito-urinary surgeon and dean of St. Bartholomew's Hospital) is more optimistic. He admits that the medical curriculum makes considerable demands on the student's time and energies. He got one of his colleagues to select 100 medical students and ask them for their personal views. Almost all said that they were not overworked. Mr. Girling Ball finds the question whether the health of students generally is adversely affected by their work hard to answer. With the object of investigating this point a student health service was established at the hospital. The following figures are interesting. During the past ten years 1,028 students have entered St. Bartholomew's, ten have died and eight have failed to qualify through ill health. Of the ten deaths six were the result of accident. Thus the number who had to relinquish

medicine owing to ill health was small. Numerous facilities for exercise are afforded to the students. There is little teaching on Wednesday afternoons and none on Saturdays. Mr. Girling Ball therefore does not believe that the strain on any normal student is such as to endanger his health. It should be borne in mind that he speaks only from the experience of his hospital, where the arrangements are excellent.

PARIS

(From Our Regular Correspondent)

Sept 25 1937

Decrease in Number of Students Seeking Honorary Diplomas

Until the passage of the Armbruster law in 1933, many foreign students entered the French medical schools as candidates for the university diploma (*diplome universitaire*). This did not confer the right to practice here but was of purely honorary character and could be used as a stepping stone to a license to practice, if the examinations leading to the French bachelor of arts degree were passed. The requirements are so rigid now that those who are not born in France or its colonies or have not been naturalized for at least ten years cannot be candidates for a state license even though they possess both the university diploma and the bachelor of arts degree. Consequently the number of foreign students is constantly decreasing. Prof. Henri Hartmann of Paris, president of the association to encourage foreign physicians to visit or study in France, announced recently that in 1929 there were 280 foreign medical students here. This number decreased to seventy-one in 1935 and to thirty-one in 1936. There are a number of reasons for this drop such as the world economic crisis, difficulties of taking money out of certain countries, protests by French medical men against invasion by foreigners, and especially better facilities for medical instruction in countries like those of Central and South America and eastern Europe, which formerly sent a great many students to French medical schools and physicians for postgraduate courses.

Medical Examination of First Year Students

As in 1935 and 1936, the Faculty of the Paris Medical School has arranged for examination of all students entering the preliminary medical year this fall. Although such an examination is not obligatory, a plea has been made by the dean for all students to appear as soon as they are notified. Too many young students become ill during their first or second years as the result of being exposed to pulmonary tuberculosis; hence the preliminary examination aims particularly to detect cases showing incipient lesions or negative tuberculin reactions before they begin their medical studies. If the student so requests, the results of the examination will be sent to their parents or family physician.

Prize for Article on Social Aspects of Tuberculosis

The Leon Bernard Foundation of the International Union Against Tuberculosis announces that the biennial prize of 2,500 francs in memory of Prof. Leon Bernard will be awarded during 1938. The subject chosen for the competition is "Social Aspects of Tuberculosis" and articles must be written in either French or English, not to exceed 10,000 words. Those who desire to send articles can secure information by writing to the Secretary of the International Union Against Tuberculosis, 66 Boulevard St. Michel, Paris XI. The articles must be in the hands of the executive committee before May 1, 1938.

Aeronautic Medicine Congress

This year's meeting was held July 6 and 7 at the Faculté de médecine de Paris. A report was made by medical officers of the air service on the mode of transport of the sick and injured by airplanes in the French colonies. Since 1920 6,820 patients have been thus transferred to base hospitals. Use is

also made of airplanes for inspection of widely scattered army centers by officers of the health service and for carrying serums and drugs to isolated stations, at times with the aid of parachutes. In May an incipient epidemic of bubonic plague was checked in thirty-six hours by sending serums and vaccines a distance of 580 miles by airplane.

In the Section on Aeronautic Medicine, Dr. Garsaux spoke on recent discoveries in the physiology of this field. A normal person is well able to tolerate an increase of the present velocity of ascent and descent of planes. In order to rise above an altitude of 12,000 meters it is indispensable for the aviator to have an outfit similar to that used by deep sea divers.

Medical Problems in the French Colonies

The July 6 meeting of the Académie de médecine was devoted to medical problems in the French colonies, which are scattered all over the world and are more numerous than is generally thought.

The first paper was by Bezançon and Arnould on "Newer Aspects of Tuberculosis Among Negroes." During the World War, Borrel had found that this disease in soldiers from the colony of Senegal greatly resembled the forms observed in children and in guinea-pigs. Acute onset with localization in the cervical lymph nodes was very common. The severity of the infection was probably the result of a lack of previous immunization. Later studies, however, have shown that tuberculosis is in reality not more frequent in Negroes coming from the colonies than among other persons living under poor hygienic conditions. At La Rochelle, in the southwestern part of France, a large number of recruits from Senegal were placed in an army camp in which every precaution was taken to detect and isolate those already infected with tuberculosis. In addition, warm clothing, ample nourishment, well heated barracks and comfortable uniforms were provided. The result has been that the fear of widespread tuberculous infection among Negro troops has entirely disappeared.

The second paper, by Marchoux, was on "The Antileprosy Fight in the French Colonies." For a long time little attention was paid to the disease, the lepers were regarded more as criminals and put in prisons instead of in hospitals. The result was that they hid themselves and were more of a menace than ever. Since the third International Conference on Leprosy, held in 1923 at Strasbourg, a special department for this disease has been created in the French ministry for colonies. Dispensaries have been established in every colony, and visiting nurses instruct lepers at their homes how to avoid contamination of their families and how to apply dressings to ulcerating lesions. Advanced cases are sent to hospitals where they can be frequently seen by medical officers. It is hoped that a decided reduction will be the result of these more modern measures.

The third paper was on "Sanitary Protection," by Lasnet, and the fourth on the "Organization of Colonial Medicine," by Dr. Sorel, who stated that more than 800 physicians were now engaged in fighting disease in the colonies. As an example of their excellent work, statistics were cited of a decrease in the mortality of cases of trypanosomiasis in equatorial French Africa from 20 per cent to 0.6 per cent.

The last paper was by Achard, on "Medical Instruction of Natives in the Colonies." Although it is desirable to have physicians who are not natives of the colonies, an effort should be made to have as their aids medical men who were born in the colonies. They are better acquainted with the errors in hygiene and food and have more influence in convincing the natives regarding the necessity of taking treatments. There has been some objection to having native physicians, but Achard believed that this could be overcome if their work was subjected to frequent supervision. Great progress has been made in one of the provinces of Indo China in establishing a medical school for native young men, who have been found eager to

learn In Madagascar, a large French colony, the graduates of the local medical school are given government positions for six years and are then allowed to practice independently

Spontaneous Benign Pneumothorax

Twelve cases of benign spontaneous pneumothorax are reported by Castex and Mazzei of Buenos Aires in the January issue of the *Archives medico-chirurgicales de l'appareil respiratoire*. All were male patients, the majority between 20 and 25 years of age. The pneumothorax is total and may follow exertion or occur without any effort. The films reveal small bullae-like clear areas, with borders so fine that they resemble soap bubbles, in any area of the visceral pleura. They are termed "subpleural bullae" by the authors and vary greatly in size and number. The prognosis is favorable, as a rule, but resorption may take place slowly in some cases. The etiology of these bullae is still dark, but they do not bear any relation to tuberculosis.

Chronic Myelogenous Leukemia in Machinery Oilers

Sabrazes and Bideau report a case in the May 30 issue of the *Gazette medical de Bordeaux* in which there seemed to be an etiologic relationship between myelogenous leukemia and a lubricant, containing benzene, as employed by a machinery oiler 20 years of age. His hands and face, during working hours, over a period of three years, were constantly covered with oil. Nearly all commercial oils contain traces of benzene. The heavier the oil, the more it contains. The clinical picture in the case reported by the authors was that of a myelogenous leukemia with splenomegaly and slight involvement of the lymph nodes. The authors believe that there ought to be a law against the use of oil, for the lubrication of machinery, which contains too high a percentage of benzene hydrocarbons.

Professor Lambret Honored

A distinguished surgeon of northern France, Professor Lambret, has just received a much merited recognition of his services as director of the Anticancer Center of Lille, where he is also professor of surgery, in being appointed a grand officer of the Legion of Honor.

BERLIN

(From Our Regular Correspondent)

Sept 5, 1937

Effects of Alcohol on Drivers of Motor Vehicles

Experimentation on the effects of alcohol on drivers of motor vehicles was carried on by the Institute of Medical Jurisprudence at Wurzburg University with the cooperation of the traffic authorities. The tests showed to how great an extent drivers are influenced by alcohol. Six motorcyclists submitted to the tests. First, while they were perfectly sober, the drivers were given four problems to solve. Then, after ingestion of alcohol, they were required to repeat the solutions. The principle established by previous experimentation, namely, that an influence exists if the alcohol value of the blood has reached 0.7 or 0.8 per cent was followed. Twenty-four other individual tests were given subsequent to still further ingestion of alcohol. All the motorcyclists exhibited an impaired efficiency after indulgence in alcohol. Five of the six drivers increased their speed considerably. Thence it was concluded that after even moderate indulgence in alcohol a driver is more inclined to speed than if in a state of perfect sobriety and accordingly the greater the amount of alcohol consumed the greater will be the element of danger. In three of the six drivers the reaction time was observed to be considerably lengthened. None of the drivers were drunk in the popular sense of the term at any time during the experiment, the average alcohol value in the blood at the completion of the tests was 0.12 per cent.

The Sex Hormones

For biologic evaluation of testis preparations, the cock's comb method has become the standard procedure. Loewe and Vein in the interests of further standardization, have made inter-re studies based on changes that follow castration: atrophy of the vesicular glands, flat and cell-deficient epithelium, scanty and chromophobic secretion. Treatment with androgen effected a recession of all these sequels of castration. Whereas at the outset of the investigation the cock's comb test, as the simplest procedure, was mostly relied on, the determination of efficacy by means of the gland test came to be generally adopted because of its greater biologic importance. Dr. Dirscherl discussed this topic in the Medical Society of Frankfurt on the Main. Dirscherl found that besides the already recognized effective substances there was a new substance for which the group term "vesine" was suggested. The vesines differ from the better known androgens in that they exert a stronger effect on the vesicular glands. Conversely, they appear to have practically no influence on the combs of capons. A vesine is found combined with estrogen in the urine of mares. The urine of mares also contains a prohippovesine which by hydrogenation becomes a hippovesine B productive of powerful glandular reactions. The latter substance may be identical with hippovesine A. Vesines are also encountered in wool fat and in extracts of cinchona bark. Purification has thus far yielded crystallized fractions which, if used in the vesicular gland test are more effective than testosterone.

Professor Seitz, ordinarius in gynecology, called attention to the fact that the problem ought also to be considered from the phylogenetic point of view if the remarkable reciprocal interrelation of male and female sex hormones is to be properly understood. Estrogen is present in the lowest forms of life in plants, bacteria, protozoa. It is also found in coal, unchanged after hundreds of thousands of years. In other words, it is present long before the two sexes become differentiated. In addition to its specific sexual influence it produces a series of nonspecific effects both in man and in the other mammals. In lower animal species, without specific sexual differentiation, it is first of all a hormone of growth. Only higher in the evolutionary scale does it exert specific sexual influence. It is thus a hormone of primitive growth and primitive sex.

Genetic Studies of the Finger Ridges

Dr. Duis of the Institute of Racial Biology at Koebnigsberg recently reported to the local society of scientific medicine the results of his genetic studies of ridges on the hands and fingers. The structure of the delicate system of the cristae cutis which covers the surface of the hands and feet, depends on embryologic factors of a proved hereditary nature. That which is inherited is not the particular combination of ridges but rather the morphologic condition of the embryonal period on which the development of the standard type depends. This genetic biologic observation does not diminish the importance of the cristae cutis for the criminal identification service, since the hereditary determination of the embryonal condition by no means precludes variation therein. Study of the embryologic factors elicited an interrelation of the degree of curvature in the finger pads and the type (Bonnevie). This interrelation in turn is dependent on the thickness of the epidermis and on occasional infiltration of fluid cushions in the embryonal finger pads. Since the cushion of the thumb side and that of the little finger side of the hand are separately inherited, the quantitative value (as an expression of the number of ridges per type) is determined by three hereditary factors each independent of the other, namely: the factor of general cutaneous elasticity and two cutaneous factors. Accordingly it becomes possible to determine the genetic type and this principle has already been applied in forensic determinations of paternity. Similarly the ridge type of the palms have been proved heritable. Racial differences of anthropologic significance are also exhibited in the distribution

of the hand and finger ridges, for example, in the difference between northern Europeans and Mongolians or in the papillar affinity of the Eskimo group with the European racial branch. The flexor ridges of the hand originate independently of the muscular and osseous development as demarcations of the pads in phylogenically produced cutaneous areas.

The Importance to Public Health of Treatment of Strabismus

Dr H Harms recently addressed the Berlin Medical Society on the importance to public health of a proper treatment of strabismus. Concomitant strabismus is not a sign of degeneration but often occurs in healthy persons, even in those of superior endowment. The condition is apt to produce a sensory disturbance of the stereoscopic vision which renders the persons thus affected unfit for many occupations. The most serious result is an asthenopia of the diverted eye which may even end in unilateral blindness. According to statistics, 4 per cent of the population of all European countries are strabismic and some 50 per cent of this number are weaksighted in one eye. This means that in Germany from around 2 000 000 to 2,500 000 persons are strabismic and from 1,000,000 to 1 300 000 affected with unilateral weaksightedness.

CAPE TOWN

(From Our Regular Correspondent)

Aug 20, 1937

Senecio Poisoning

Since 1926, when Wilmott and Robertson published a paper in the *Lancet* on senecio poisoning it has been known that contamination of wheat by the immature florets of various species of bladderswort may cause a fatal hemorrhagic panhepatitis in human beings. From time to time such cases of senecio poisoning are reported. Recently a family of five—a husband and wife and three children, were admitted to a hospital with the characteristic signs of senecio intoxication. These are progressive malnutrition with enlargement of the liver and spleen, transient jaundice, definite portal obstruction and rapidly accumulating ascitis. One of the patients has since died and the necropsy showed the typical lesions in the portal lobules, hemorrhagic infiltration and cirrhosis, pathologically very similar to what is found in cases of amanita poisoning and in eclampsia. These cases are now the subject of intensive investigation, for the syndrome is of particular interest as it is not quite clear in what manner the patients have been poisoned. The known alkaloids of the senecio plant are volatile, and prolonged feeding of experimental animals with the contaminated wheaten flour has not been followed by symptoms indicative of poisoning such as is seen in horses, for example, by the green plant. It is probable that some familial or other factor is involved, for clinically the cases now in the hospital remind one strongly of the familial, juvenile type of interstitial hepatic cirrhosis described by French writers.

An Afrikaans Medical Faculty

There are at present two faculties of medicine attached to universities in the Union of South Africa. The elder is the faculty of medicine of the University of Cape Town, the younger, that of the University of the Witwatersrand at Johannesburg. Together they turn out about sixty newly qualified physicians every year. The annual wastage in the medical profession through death, departure or other causes is about fifty and allowing for the increase in the population it may be estimated that an annual recruitment of 100 for the profession is not economically excessive. When our medical schools started, fears were expressed that the profession would soon be overcrowded and that the new graduates would find little or no work to do while their numbers would severely handicap already established practitioners who already had difficulties in making both ends meet. Experience has however, completely falsified these pessimistic expectations. The grad-

uates of our medical schools have found no difficulty whatever in getting remunerative employment, and indeed the demand for doctors is as great and as lively today as it was some years ago. This year's entry for the medical course at both universities with faculties of medicine exceeds last year's in numbers, and teachers of medical subjects are seriously perturbed about the size of the classes they have to handle. There is abundant clinical material, but it is still, to a large extent, unorganized, with the result that comparatively little of it is available for regular clinical teaching. To some extent this difficulty will be overcome, as far as the Cape Town University is concerned, as soon as the big new hospital on the Groot Schuur estate is open.

The medium of instruction at both schools is English, and medical curriculums are based largely on English models. It is now increasingly urged, partly as the result of the rapid rise of Afrikaans, the third official language of the country, and partly for the satisfaction of the growing sense of nationalism, that a separate medical school, with Afrikaans as its medium of instruction, should be established, preferably at Pretoria, which has a good modern hospital and has recently been the scene of intensive industrial development. It is argued that such a school will complement the existing two schools by concentrating more actively on continental methods and will supply the requirements of South African medical students who now go to Dutch or German schools for their professional study. The suggestion has been received with mixed feelings by the profession, who, while fully realizing the justice of the demand for professional education in Afrikaans, prefer that such instruction should be given in parallel classes in the existing schools rather than that a third medical school should be established in competition with those at Cape Town and Johannesburg. The matter is one for the minister of education to decide, however, and it is likely that the University of Pretoria which has taken the lead in urging the establishment of an Afrikaans faculty of medicine, will be able to show that it is financially able to support such a school. In that case there is every probability that a third faculty of medicine will be established before long.

Medal for Services to the Profession

The Medical Association of South Africa (British Medical Association) awards a gold medal for meritorious services rendered to the profession. This distinction has heretofore been granted only twice, the first recipient being the late Dr Darley Hartley, the doyen of medical journalism in this country, and the second Dr A J Orenstein the first president of the association. This year a third award has been made, and the medal has been awarded to Dr William Thomas Frederick Davies, one of the best known and most respected medical men in the country. Dr Davies, who obtained his medical education at the school of the London Hospital, graduated M.D. London in 1887 and three years later came to South Africa where he soon became known as one of the leading surgeons in Johannesburg. He was a soldier as well and commanded the Second Imperial Light Horse in the Southwest campaign in 1915 and was awarded the DSO and CMG. He took an active interest in politics and was for some years a member of parliament, where he did excellent work on select committees and was instrumental in passing the medical dental and pharmacy act in 1928. He was for many years chairman of the Transvaal Medical Council and when the four medical councils were united into what is now the South African Medical Council he was unanimously elected president, a position which he still holds. Dr Davies is a man of charming personality, cultured and broad minded who is recognized as one of the leaders of the profession in this country. He retired from active practice of his specialty some years ago when he was appointed consulting surgeon to the Johannesburg General Hospital and now lives on his river farm in Natal.

ITALY

(From Our Regular Correspondent)

Sept 15, 1937

Radiomedical Center Closed

The Italian radiomedical center, which has been working for two years, was recently closed. Drs. Guglielmo Marconi and Guida were president and director, respectively, of the center. Professor Guida presented to several ministers a report of the work done by the center in 1936. The personnel of the center gave medical advice to be used over the radio for ships which navigated without physicians aboard. The consultations were transmitted by a perfectly organized radio service between ships and the medical center. Both the sailors and the patients were greatly benefited by the service, which was one of the best of its kind, especially because of the geographic situation of Italy in the Mediterranean sea. Patients who became ill aboard were given medical attention by the radiomedical service. Detailed symptoms were sent by radio to the medical center, which sent back instructions for treatment and management of the case. When emergency operations were indicated, the ships were ordered to land their patients immediately.

Insurance Against Disease in Sailors

A law concerning health insurance of sailors was recently passed by the cabinet council. The insurance benefits will be as follows: Sailors who are taken ill while on duty will be given complete medical and surgical care with hospital expenses paid as well as a daily allowance equal to 75 per cent of the daily salary, the salary to be allowed for one year. The same benefits will be given to sailors who report ill within twenty-eight days of the last day of duty on the ship. Sailors on ships of less than 50 tons capacity are excluded from the benefits. Women on duty on merchant vessels will be given obstetric care and a daily allowance for four weeks before delivery and for four weeks after. In case of the death of a sailor, the family will be given compensation equal to the salary for one month for funeral expenses.

Laws Concerning Health

The subsecretary of state, in a recent session of the senate, reviewed the health laws. A general code is to be published which will contain all the laws concerning health and the work of physicians in provinces and municipalities. Laws concerning pharmacy have already been approved by the cabinet council and will be put into effect in the near future. Pharmacy is given an important standing in relation to the state as a corporation. It is brought up to the standards of the general code of health matters. Laws concerning specific remedies, biologic products and medical and surgical attendance were passed. Laws for the organization of and the construction of hospitals are being prepared. Hospitals are distinguished in two categories by the work they perform, the equipment they have and the diseases treated in them. The members of the staff and the aptitudes of the personnel are given great attention.

Clinical Teaching

An agreement between the directors of the clinics of Rome University and those of the reunited hospitals was recently signed. There was an old controversy because of the fact that the hospitals have to provide teaching clinical material to the clinics of the university without any benefit to the hospital physicians. The agreement establishes that the heads of clinical wards are to be considered from now on assistants to the clinical professors. They will give instruction to the students under the direction of the clinical professors and have the rights of regular professors but will depend on the hospital for their appointment as heads of wards and on the university for appointment as teaching professors. Students in the last three years

of medicine will be accepted, under the responsibility of the university, in helping hospital physicians in emergencies. The heads of the clinics have authority in selecting the cases for clinical teaching and demonstration to the students.

Practical Hospital Training Now Required

The minister of national education recently promulgated the following regulations. Students of medicine must have an internship of at least six months without interruption. During this time they will have a practical training in clinical medicine, surgery, obstetrics and gynecology. The internship is to be made after having satisfactorily passed the examinations of the sixth year of medical studies. The clinics will be open all through the summer. The professional examinations are presented not later than July 15. As soon as the internship is fulfilled, the young physicians can take the state examination so as to practice.

Personals

Prof. Cesare Colucci, director of the Istituto di Psicologia sperimentale of Naples University, resigned because of the age limit and was appointed professor emeritus. He was also the head of the psychopathic hospital and the first teacher of experimental pathology in Italian universities. He gave testimony as an expert in more than 100 medicolegal cases. He has published about 140 articles, especially reports of experiments and books on anatomy and histology of the nerve cell, the retina and the organs of vision and, in collaboration with Palladino, showed the nervous connections of those structures to the frontal lobe in man. His studies on cataplexy are of importance. The edition of his book with lectures on psychology was completely sold out.

Marriages

LAURENCE M. WING, Wailuku, Maui, Territory of Hawaii, to Miss Jeanne Pauley of St. Joseph, Mich., in Honolulu, July 22.

RICHARD HENRY WALKER JR., Mountain Home, Tenn., to Miss Mabel Barbara Callahan of Lynchburg, Va., June 10.

LEWIS R. SCUDDER, New York, to Miss Dorothy Lucille Bridger of Genoa, Ill., in Sycamore, Ill., in July.

WILLIAM FIELDING BRYCE, Brooklyn, to Miss Helen Marguerite Thacker of Reidsville, N. C., July 20.

JOHN MAX McCULLOCH, Knoxville, Tenn., to Miss Maria Elizabeth Bryan of Ralph, N. C., July 2.

EUGENE N. SMITH, Gainesville, Texas, to Miss Frances Marion Beeson of Fort Worth, June 30.

COLVIN WOOD SALLEY, Baytown, Texas, to Miss Justina Louise Campbell in Houston, July 3.

RALPH CHANDLER PARKER JR., Batavia, N. Y., to Miss Marta Aspegren of Norfolk, Va., July 20.

HARRY B. NEEL, Rochester, Minn., to Miss Maj. Stina Bjornson of Wellsville, N. Y., July 29.

ARCHIE LIPE BARRINGER to Miss Mary Evans Foil, both of Mount Pleasant, N. C., in July.

EMMETT EDWARD MARTIN, Haines City, Fla., to Miss Marian Marston of Tampa, in June.

JOHN PHILLIP LYNCH to Miss Helen Mansfield Davis both of Richmond, Va., June 25.

ORVILLE N. NELSON, Bay Pines, Fla., to Miss Jane Sherwood of Kimball, Minn., June 30.

WILLIAM WALLACE FULLER to Miss Anne Olive Bas, both of Richmond, Va., July 10.

NEILL HENRY McLEOD JR., to Miss Sara Leinster, both of Raleigh, N. C., June 26.

CARL WISE MEADOR to Miss Margaret Anita Mitchell, both of Richmond, Va., July 7.

JOSEPH H. STEGER to Miss Helen Presley, both of Fort Worth, Texas, July 7.

WILLIAM B. SWIFT, Fort Worth, Texas, to Miss D. Rowland, July 12.

FRANK B. DUNCAN to Miss Lestelle Bain, both of Fort Worth, Texas, July 3.

Deaths

Henry Robert Murray Landis ☉ Philadelphia, Jefferson Medical College of Philadelphia, 1897, since its inception on the staff of the Henry Phipps Institute and for many years director of the clinical and sociological departments, professor of clinical medicine at the University of Pennsylvania School of Medicine, formerly demonstrator of clinical medicine at his alma mater, one of the founders and an honorary vice president of the National Tuberculosis Association president of the Pennsylvania State Tuberculosis Society, 1928-1931, member of the board of directors of the Philadelphia Health Council and Tuberculosis Committee, member of the Association of American Physicians, fellow of the American College of Physicians, for thirty years visiting physician to the White Haven (Pa.) Sanatorium, on the editorial staff of the *American Review of Tuberculosis* co author, with Dr George W Norris, of five editions of a textbook entitled *Physical Diagnosis and Diseases of the Chest*, aged 65, died, September 14, in the Bryn Mawr (Pa.) Hospital

Isaac Ivan Lemann ☉ New Orleans, Tulane University of Louisiana Medical Department, New Orleans, 1900, vice chairman of the Section on Practice of Medicine of the American Medical Association, 1932-1933, since 1914 professor of clinical medicine at his alma mater, assistant professor of medicine, 1910-1914, and instructor in medicine, 1906-1910, member of the Association of American Physicians and the American Clinical and Climatological Association fellow of the American College of Physicians, served during the World War, visiting physician to the Charity Hospital, 1900-1925, and consultant in medicine since 1925, visiting physician to the Touro Infirmary 1907-1919, and chief of the medical service since 1919, aged 60, died, September 2, at Rochester, Minn., of gastric hemorrhage

Leopold Mitchell ☉ Lieut Colonel, U S Army, retired, New Orleans, Tulane University of Louisiana Medical Department, New Orleans, 1910, entered the medical corps of the U S Army as a first lieutenant in 1912, served during the World War, retired as a major in 1922 after eleven years service, according to the acts of June 30 and Sept 14 1922 was advanced on the retired list to the grade of lieutenant colonel by virtue of an act of Congress June 21, 1930, fellow of the American College of Surgeons, visiting gynecologist to the Charity Hospital, member of the adjunct staff of the Touro Infirmary, aged 49, died, September 1, of carcinoma

John Dodds Flagg ☉ Buffalo, McGill University Faculty of Medicine Montreal, Que., Canada 1887, L R C P, Edinburgh, Scotland, and L R C S, Edinburgh, Scotland, 1887, member of the American Academy of Ophthalmology and Otolaryngology, formerly instructor in ophthalmology at the University of Buffalo School of Medicine, on the staff of the Charity Eye, Ear and Throat Hospital of Erie County, aged 77, died, July 19, of carcinoma of the lung

Arthur O Hart ☉ St Johns, Mich, Michigan College of Medicine and Surgery, Detroit, 1894 fellow of the American College of Surgeons, surgeon to the Clinton Memorial Hospital, St Johns, and St Lawrence and Edward W Sparrow hospitals, Lansing, aged 66, died, July 28 in the University Hospital, Ann Arbor, of hypernephroma of the left kidney

Charles Wesley Haywood ☉ Elkhart, Ind New York Homeopathic Medical College and Hospital, 1894, past president of the Elkhart County Medical Society on the staff of the Elkhart General Hospital, aged 67, died, July 14, in the Chippewa County War Memorial Hospital, Sault Ste Marie, Mich., of heart disease

Frederick Dabney Bullock, Larchmont, N Y Johns Hopkins University School of Medicine Baltimore, 1907 assistant professor of cancer research at the Columbia University College of Physicians and Surgeons, New York, on the staff of the Lenox Hill Hospital, aged 58, died, August 15, in Dubois, Pa

Edwin Orren Harrold, Marion Ind, Rush Medical College, Chicago 1902 member of the Indiana State Medical Association past president and secretary of the Grant County Medical Society, on the staff of the Marion General Hospital, aged 61, died July 12, of carcinoma of the prostate

Emory Wallace Richie, Hackensack, N J, Howard University College of Medicine Washington, D C 1916 member of the Medical Society of New Jersey aged 50 on the staff of the Hackensack Hospital where he died July 21 of subarachnoid hemorrhage and acute glomerular nephritis

George Young Davis, Youngstown Ohio Cleveland College of Physicians and Surgeons, Medical Department of the

University of Wooster, 1899 for many years health officer of Mahoning County, and president of the school board of Sebring, aged 70, died, July 9, of coronary occlusion

George Southwick Thompson, Hopkinton, Mass, University of Vermont College of Medicine, Burlington, 1902, for many years school physician, on the staffs of the Milford (Mass.) Hospital and the Framingham (Mass.) Union Hospital, aged 63, died, July 27, of heart block

Frederick Charles Johnson ☉ Bradford, Pa, Cleveland Medical College 1897 Jefferson Medical College of Philadelphia, 1900, fellow of the American College of Surgeons, on the staff of the Bradford Hospital, aged 61, died, July 31, of carcinoma of the bladder

John De Lafayette Grissim, San Francisco, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893, member of the California Medical Association, fellow of the American College of Surgeons, aged 68 died, July 21

Frank H Thompson, Annapolis, Md., University of Maryland School of Medicine, Baltimore, 1879, for many years a member of the city council, and president of the board of trustees of the local public schools, aged 82, died, July 28, of chronic myocarditis

Alexander A Ross, East Chicago, Ind, Trinity Medical College, Toronto Ont, Canada 1897, member of the Indiana State Medical Association, on the staff of St Catherine's Hospital, aged 68, was found dead in bed, July 19, of coronary occlusion

Frank Crawford Robinson, Walla Walla, Wash, Rush Medical College Chicago, 1902, member of the Washington State Medical Association, fellow of the American College of Surgeons, served during the World War, aged 63, died, July 14

William Edward Reed, Nashua, N H, Harvard University Medical School, Boston, 1901, member of the New Hampshire Medical Society, at one time city physician, county physician and police commissioner, aged 60, died, July 22, in Boston

Roscoe Serrel K Hanigan, Quincy, Mass, University of Maryland School of Medicine, Baltimore, 1916, member of the Massachusetts Medical Society, served during the World War, aged 46, died, July 30, of chronic nephritis and cerebral hemorrhage

Harold Richard Keegan, Chicago, St Louis University School of Medicine, 1925, member of the Illinois State Medical Society, aged 41, was killed July 28, when he fell from a ladder at the Wilgus Sanitarium, Rockford, where he was a patient

Earl Jameson ☉ Walnut Grove, Minn, Hahnemann Medical College and Hospital, Chicago, 1905, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1908, aged 60, died, July 19, of meningitis

John Austin Woodmansee ☉ Emporia, Kan, University Medical College of Kansas City, Mo, 1912, aged 52, on the staffs of St Mary's Hospital and the Newman Memorial County Hospital, where he died, July 28, of heart disease

Alexander Stephens Hawkins, Clermont, Fla, College of Physicians and Surgeons, Baltimore, 1879, member of the Florida Medical Association aged 86, died, July 22, in the Umatilla (Fla.) Hospital, of bronchopneumonia

Walter Kendrick Hotchkiss, Brighton Colo, University of Colorado School of Medicine, Denver, 1913, member of the Colorado State Medical Society, served during the World War, aged 48, died July 1, of angina pectoris

Walter Callahan Harris, Worcester, Mass, Tufts College Medical School, Boston, 1918, served during the World War aged 46, died July 10 in St Vincent Hospital, of esophageal hemorrhage and cirrhosis of the liver

Daniel Webster Ward, Tuscaloosa, Ala, Birmingham Medical College 1906 member of the Medical Association of the State of Alabama, served during the World War, aged 56 died, July 29 of coronary occlusion

Corydon Webster Harlow, Melrose Mass Medical School of Maine Portland, 1888 member of the Massachusetts Medical Society on the staff of the Melrose Hospital, aged 72, died, July 7, of coronary thrombosis

Adelbert Merton Hubbell ☉ Haverhill, Mass, Boston University School of Medicine, 1889, for many years a member and at one time chairman of the board of health aged 73 died, July 3 of intestinal obstruction

Frank James Bickford, Centralia, Wash, University of Minnesota College of Medicine and Surgery Minneapolis 1902 served during the World War, aged 66, died, July 22, of a self-inflicted gunshot wound

Milo H Trovillion, Metropolis, Ill., St. Louis College of Physicians and Surgeons, 1892, member of the Illinois State Medical Society, secretary of the Massac County Medical Society, aged 70, died, July 15.

Joseph M Hanley, Chillicothe, Ohio, Columbus Medical College, 1877, formerly health commissioner of Chillicothe, aged 81, on the staff of the Chillicothe Hospital, where he died, July 30, of cerebral embolism.

Lytleton Thomas Hutto, Newville, Ala., Medical College of Alabama, Mobile, 1903, member of the Medical Association of the State of Alabama, aged 56, died, July 12, in St. Margaret's Hospital, Montgomery.

Lydia Etta Smith Farmer, Folsom City, Calif., College of Physicians and Surgeons, Keokuk, Iowa, 1893, member of the California Medical Association, aged 64, died, July 1, in the Sutter Hospital, Sacramento.

Frank Piper * Boston Harvard University Medical School, Boston 1893 served during the World War, for many years medical director of the Boston Mutual Life Insurance Company, aged 71, died, July 8.

William Thomas Knowlton, Holden, Mass., Albany (N. Y.) Medical College, 1899, member of the Massachusetts Medical Society, aged 61, died suddenly, July 29, in Athens, N. Y., of coronary sclerosis.

David Alexander Hilliard, Geff, Ill., Marion-Sims-Baumont Medical College, St. Louis 1902, member of the Illinois State Medical Society, aged 64, died, July 11, of infection of the gallbladder.

Frank Willingham Rogers, Ashburn, Ga., Atlanta College of Physicians and Surgeons 1913, member of the Medical Association of Georgia, aged 49, was killed, July 28, in an automobile accident.

William Merrill Plimpton, Glenwood, Iowa, Chicago Homeopathic Medical College, 1896, formerly mayor of Glenwood, and for many years a member of the school board, aged 67, died in July.

Walter Andrus Phipps, Quincy, Mass., Harvard University Medical School, Boston, 1878, member of the Massachusetts Medical Society, aged 83, died, July 14, in the Quincy City Hospital.

Wilburn H Graves * Pittsburg, Kan., University Medical College of Kansas City, Mo., 1907, on the staff of the Mount Carmel Hospital, aged 53, died, July 9, of cardiovascular and renal disease.

Simeon Kelly, Zanesville, Ohio, Miami Medical College Cincinnati, 1895, member of the Ohio State Medical Association, formerly health officer, aged 69, died, July 22, of cerebral hemorrhage.

Louis H Glosemeyer, O'Fallon, Mo., Beaumont Hospital Medical College, St. Louis, 1897, member of the Missouri State Medical Association, aged 65, died, July 19, of coronary thrombosis.

Jonas Dabner Hartzell, North Star, Ohio, Medical College of Ohio Cincinnati, 1893, member of the Ohio State Medical Association, aged 66, died suddenly, July 24, of coronary embolism.

Fred G Stone, Sledge, Miss., Chattanooga (Tenn.) Medical College, 1907, member of the Mississippi State Medical Association, aged 56, died, July 18, in Tupelo, of angina pectoris.

Fred Hyde Bethune, Emo, Ont., Canada, Trinity Medical College Toronto, 1898, served with the Canadian Army during the World War, aged 66, died July 28, of valvular heart disease.

Stephen W Goodrich, Yonkers, N. Y., New York Homeopathic Medical College 1871, Civil War veteran, aged 90, died, July 27, of contusion of the chest wall and chronic myocarditis.

Clarence Elbert Aldenderfer, Mendon, Mich., Barnes Medical College, St. Louis 1907, aged 61, died, July 22, in the University of Michigan Hospital, Ann Arbor, of carcinoma.

George Dosson Andrews * Walsenburg, Colo., Missouri Medical College, St. Louis, 1893, past president of the Huerfano County Medical Society, aged 76, died, July 20.

William Anderson McCauley, Copper Cliff, Ont., Canada, Trinity Medical College Toronto 1902, aged 58, died, July 7, of heart disease while swimming at Lake Penage, Ont.

James Joseph Grady, New York, University of the City of New York Medical Department 1894, aged 67, died, July 12, of pulmonary tuberculosis and chronic nephritis.

Benjamin Logan Holmes, Carrollton, Ky., University of Louisville (Ky.) Medical Department 1889, served during the World War, aged 71, died July 3, of heart block.

Ambrose Cecil Stewart, San Diego, Calif., New York Homeopathic Medical College and Hospital, 1887, aged 82, died, July 24, of arteriosclerosis and heart disease.

Otto W Henssler, Chicago, College of Physicians and Surgeons of Chicago, 1893, aged 68, died, July 26, in the American Hospital, of carcinoma of the stomach.

Robert Clarence Hull, Detroit, Detroit College of Medicine, 1911, member of the Michigan State Medical Society, aged 49, died, July 14, of heart disease.

Frank Miner Kerry, Benton Harbor, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887, aged 78, died, July 23, of pneumonia.

Timothy Joseph Halloran, Lowell, Mass., Harvard University Medical School, Boston, 1899, aged 63, on the staff of St. Johns Hospital, where he died July 3.

Martin S Gillespie, Edinboro, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1895, aged 74, died July 28, of cerebral hemorrhage.

Meyer Katzenberg * New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1885, aged 74, died, July 22.

Adolph Martin Restenberger, Philadelphia, Temple University School of Medicine, Philadelphia, 1920, aged 47, died, July 11, of carcinoma of the liver.

Herman Alvin Wolter * Green Bay, Wis., Rush Medical College Chicago, 1881, aged 81, died, July 25, in St. Vincent's Hospital of prostatic hypertrophy.

Harrison H Doyle, Koppel, Pa., New York Homeopathic Medical College and Hospital, 1891, aged 76, was found dead, July 22, of chronic myocarditis.

William O Patterson, Pueblo, Colo., American Medical College, St. Louis, 1889, member of the Colorado State Medical Society, aged 80, died, July 25.

William J Whiteaker, Dongola, Ill., Barnes Medical College, St. Louis, 1900, member of the Illinois State Medical Society, aged 65, died, July 17.

Daniel Edson Garvin * Golden, Colo., American Medical Missionary College, Chicago, 1900, aged 66, died suddenly, July 8, of cerebral hemorrhage.

John David Raborn, Trenton, Fla., Mississippi Medical College, Meridian, 1909, member of the Florida Medical Association, aged 56, died, July 21.

James Edwin Watkins, Lucknow, S. C., Chattanooga (Tenn.) Medical College, 1907, aged 66, died, July 11, in the McLeod Infirmary, Florence.

William Baldwin Wayt, Long Island City, N. Y., University of Virginia Department of Medicine, Charlottesville, 1896, aged 67, died, July 17.

Andrew Thompson Tallmadge, Keeseville, N. Y., Long Island College Hospital, Brooklyn, 1881, aged 78, died, July 3, of cerebral arteriosclerosis.

Willis Idol, Leas Springs, Tenn., University of Tennessee Medical Department, Nashville, 1895, aged 73, died suddenly, July 5, of angina pectoris.

Margaret Nichols Dassell, Jersey City, N. J., Eclectic Medical College, Cincinnati, 1916, aged 65, died, July 9, of carcinoma of the uterus.

Russell Stephen Paterson, Prichard, Ala., University of Toronto Faculty of Medicine, 1919, aged 40, died suddenly, July 14, of heart disease.

Eben Alden * Thomaston, Maine, Long Island College Hospital, Brooklyn, 1878, aged 84, died, July 20, of acute dilatation of the heart.

Frederick Dold Georgi, Buffalo, University of Buffalo School of Medicine, 1935, aged 28, died, July 28, of subacute bacterial endocarditis.

Archie Edelen Hewitt, Dayton, Ohio, Jefferson Medical College of Philadelphia, 1908, aged 54, died, July 31, of a self-inflicted bullet wound.

Cora Belle Brewster, Dover, N. J., College of Physicians and Surgeons, Boston, 1886, aged 77, died, July 25, of chronic myocarditis.

Blake E Gamble, Boiling Springs, Pa., (licensed in Pennsylvania in 1891), aged 67, died July 8, of chronic interstitial nephritis.

William R Mathews * Madison, Ind., Medical College of Indiana, Indianapolis, 1896, aged 63, died, July 27, of heart disease.

Louis Green Graves, Atwood, Kan., (licensed in Kansas in 1901), aged 67, died in July of arteriosclerosis.

Correspondence

THE USE OF CHEMICALS AS NASAL SPRAYS IN THE PROPHYLAXIS OF POLIOMYELITIS IN MAN

To the Editor.—While I agree with Dr Paul Harmon (Correspondence, *THE JOURNAL*, September 25, p 1061) that the value of nasal sprays of zinc sulfate or other chemicals as a preventive of human poliomyelitis has not yet been established, I cannot subscribe to the views he presents bearing on the pathogenesis of this disease. Dr Harmon cites at length a number of observations supporting his thesis that the causal agent may enter the body through the intestinal tract and summarily dismisses, in one sentence, the results of many years' intensive investigation of the nasopharynx by numerous workers.

On what is the zinc sulfate technic based? The fitting together of many clinical, experimental and epidemiologic observations early led investigators in this field to believe that the nasopharynx constitutes the portal of entry for the virus. Dr Hudson and I (Lennette, E H, and Hudson, N P. Relation of Olfactory Tracts to Intravenous Route of Infection in Experimental Poliomyelitis, *Proc Soc Exper Biol & Med* **32** 1444 [June] 1935) demonstrated in 1935 that section of the olfactory tracts in rhesus monkeys prevented infection with virus injected intravenously and suggested that infection by the vascular route may depend to some extent on the amount of virus excreted onto the nasal mucosa, where we had been able to demonstrate its presence. The role of the olfactory tracts was confirmed by Charles Armstrong (*Pub Health Rep* **51** 241 [March 6] 1936), who found that picric acid instilled into the nostrils tended to protect monkeys from intravenous inoculations of poliomyelitis virus. In a recent report Schultz and Gebhardt (Zinc Sulfate Prophylaxis in Poliomyelitis, *THE JOURNAL*, June 26, p 2182), who have tried a large series of substances, stated that 1 per cent zinc sulfate sprays proved to be the most efficient in preventing the experimental disease. It is this method which is now being applied to man. The failure of picric acid-alum sprays to protect during the Alabama epidemic (Armstrong Charles. Experience with the Picric Acid-Alum Spray in the Prevention of Poliomyelitis in Alabama, 1936, *Am J Pub Health* **27** 103 [Feb.] 1937) is admitted, but as an argument against the use of similar sprays it has no weight whatever even the most casual reader of Dr Armstrong's report will perceive that the outcome could hardly have been otherwise. Dr Armstrong's report emphasizes the necessity of an adequately controlled study of zinc sulfate sprays by physicians thoroughly familiar with the technic and appreciative of the fine points involved. Nothing of value will arise from indiscriminate, haphazard spraying of the population.

Dr Harmon's chief objection to nasal sprays, however, apparently lies in his belief that the virus gains access to susceptible tissue by penetration through the intestinal mucosa, in support of this opinion he presents evidence adduced by himself and by Toomey. The presence of virus in the rectal washings of four recent convalescents and its absence in the nasal washings of these and other patients Dr Harmon interprets as evidence that infection occurs by the enteric route. On the other hand attempts by other workers to isolate the virus from stools of human beings and monkeys dying of the disease have been rather uniformly negative even when concentration methods were employed (Clark, P G, Roberts, D J and Preston W S Jr. Passage of Poliomyelitis Virus Through the Intestinal Tract, *J Prev Med* **6** 47 [Jan.] 1932. Flexner, Simon. Respiratory versus Gastro-Intestinal Infection in Poliomyelitis, *J Exper Med* **63** 209 [Feb.] 1936). The proponents of the gastro intestinal theory appear to ignore the obvious possibility that virus isolated from stools may well

represent the causal agent swallowed and concentrated in the bowel over a period of many hours. The virus has also been demonstrated in abdominal sympathetic ganglions, but to assert that it represents virus migrating from the intestine would be to tread dangerous ground, since the virus of poliomyelitis, like those of rabies and Borna disease, possesses the property of wandering long distances along nerve fibers (Flexner, Simon, Clark, P G, and Amoss, H L. A Contribution to the Pathology of Epidemic Poliomyelitis, *J Exper Med* **19** 205, 1914).

Unsuccessful efforts to detect the virus in nasal washings have less significance than Dr Harmon would attach to them. The difficulty surrounding implantation of a human virus strain into monkeys, even with the use of spinal cord emulsions, is common knowledge, hence the dilute filtered washings of the nasopharynx could be expected to succeed only rarely. Nevertheless, the virus has been recovered from the upper respiratory tract sufficiently often to be of significance (Kramer, S D, Sobel, A E, Grossman, L H, and Hoskwith, B. Survival of the Virus of Poliomyelitis in the Oral and Nasal Secretion of Convalescents, *J Exper Med* **64** 173 [Aug.] 1936). As poliocidal antibodies have also been recovered from nasal washings (Amoss H L, and Taylor, E. Neutralization of the Virus of Poliomyelitis by Nasal Washings, *J Exper Med* **25** 507 [April] 1917). Dr Harmon's inability to find the virus in the nasopharynx of his convalescents may rest either on its absence, its presence in subinfective amounts or its neutralization by antibody. The simultaneous presence of virus and antibody has been demonstrated in other diseases (Lennette, E H. Studies on the Role of the Spleen in Experimental Poliomyelitis, *J Exper Med* to be published) and has led to the admonition that "caution should be exercised in assuming that any tissue extract or body fluid is necessarily free from virus because it is not infectious" (Topley, W W C, and Wilson, G S. The Principles of Bacteriology and Immunity, ed 2, Baltimore, William Wood & Co, 1936, p 858). From what has already been said it is evident that ability to demonstrate virus in the stool and its apparent absence in the nasopharynx constitute no brief for the gastro-intestinal tract as a portal of entry.

The evidence for the nasopharyngeal portal of entry for the virus of infantile paralysis consists of the recovery of the virus from the nasopharynx of abortive cases, of frankly paralyzed patients and of contacts or healthy carriers (Kramer et al). Other, more indirect, types of evidence are also available, but Dr Harmon believes that these observations lose considerable value because the virus has been found in the nasopharynx of monkeys after its intravenous or intracerebral introduction (Lennette and Hudson. Flexner, Simon, and Amoss, H L. Persistence of the Virus of Poliomyelitis in the Nasopharynx, *J Exper Med* **29** 379 [April] 1919) and therefore might be egressing rather than on its way to the central nervous system. The clear-cut results of Dr Hudson and myself as reference to our protocols will show, suggested strongly that infection did not occur in the test animals because virus excreted into the nasopharynx could not reach the central nervous system owing to the break in the olfactory pathway. Furthermore, if the vascularly introduced virus is egressing and not on its way to the central nervous system nasal sprays should have no effect in preventing the disease, Armstrong however, found that they did. Moreover, the occurrence of lesions in the olfactory bulbs of intravenously inoculated monkeys, lesions which occur only when the virus ascends the first and thirteenth cranial nerves (Sabín A B, and Olitsky, P K. The Olfactory Bulbs in Experimental Poliomyelitis. *THE JOURNAL* Jan 2, 1937 p 21. Lennette, E H. Unpublished experiments) strengthens our hypothesis. In this connection it may not be amiss to point out that since these lesions occur at levels where ganglion cells are situated it is imperative to examine minutely complete serial sections of the entire bulb of both sides. As the virus probably multiplies but little during

its ascent up the olfactory nerves, the number of affected mitral cells is small, future pathologic studies should include other parts of the central nervous system, e. g., the anterior perforated substance, which is the site of olfactory neurons of the third order

To the statement that virus in the nasopharynx of cerebrally inoculated, paralyzed monkeys may be on its way out of the body, I have no objection. Recent work by Dr. Gordon and myself indicates that poliomyelitis virus is not absorbed into the blood from either nasal or intestinal mucosa, virus does, however, spill over into the blood during the paralytic stage from its neural site of multiplication, and if the blood-clearing mechanism is not functioning properly, or is overwhelmed, there is no a priori reason why excretion onto the nasal mucosa cannot occur. Proponents of the gastro-intestinal portal of entry might therefore consider the possibility of a similar excretion into the intestine.

A source of astonishment to me was the statement "Monkeys do not contract the disease by the nasopharyngeal route except when heroic [italics mine] methods are used," and the equally terse, unqualified "The disease can be produced in monkeys by the gastro-intestinal tract." What are the "heroic" methods used for nasal inoculation? Simple instillation, with a dropper, of a suspension of infected monkey-cord? I fail to understand how this procedure can be termed heroic when compared with a method involving laparotomy and subsequent injection of the virus subserosally or into a loop of bowel pinched off and ballooned out between clamps.

When simple feeding of virus is considered, the instances of successful infection are conspicuous by their paucity and even this meager evidence possesses equivocal value, since in no case has nasopharyngeal contamination been ruled out. Unless drastic procedures are utilized, normal healthy monkeys are immune to infection by the intestinal route (Lennette, E. H., and Hudson, N. P. Failure to Infect Monkeys with Poliomyelitis Virus Through Isolated Intestinal Loops, *J. Infect. Dis.* 58:10 [Jan-Feb] 1936; Flexner, Clark and his associates).

Dr. Harmon states that Toomey infected by the vascular route monkeys whose olfactory tracts had been sectioned, and that nasal sprays of zinc sulfate did not prevent the disease when virus was administered venously or enterically. Reference to Dr. Toomey's paper (Toomey, J. A. Active and Passive Immunity and Portal of Entry in Poliomyelitis, *THE JOURNAL*, August 7, p. 402) disclosed that he referred to the amounts (not stated) of virus used in his experiments as "proper doses" or "sufficient amounts." What constitutes a "proper" intravenous dose of virus is certainly open to debate. As Hudson and I used without success what are unquestionably large doses, I interpret Dr. Toomey's "proper," in the light of his positive results, as meaning tremendous. When such amounts of an inoculum are injected into the blood stream other factors besides the sectioned olfactory tracts begin to assume a major importance. Overwhelming the blood-clearing mechanism by tremendous amounts of infectious material allows the virus to circulate freely and eventually, even though the olfactory pathway is not available, infection results from penetration of the virus through the blood-central nervous system barrier, a pitfall of which Hudson and I were aware. The same explanation holds for the failure of zinc sulfate to protect against vascular injection of tremendous doses of virus: such experiments merely make use of the blood-central nervous system barrier as a by-pass so to speak.

The use of drastic procedures in gastro-intestinal inoculation also affords the virus an alternative route to the central nervous system. It has been demonstrated (Lennette, E. H., and Hudson, N. P. Blood-CNS Barrier in Experimental Poliomyelitis, *Proc. Soc. Exper. Biol. & Med.* 34:470 [May] 1936) that monkeys whose peripheral nerves are damaged succumb to intravenous inoculation of amounts of virus subinfective for normal animals; absorption of virus from the blood takes place

at the site of trauma. I cannot perceive what possible influence chemicals applied to the nose might be expected to exert in preventing infection by this method. Allowing virus to come into intimate contact with traumatized intestinal mucosa is merely another application of this principle. Since the virus is not absorbed into the blood and hence cannot be excreted into the nasopharynx, the use of zinc sulfate serves only to introduce an unnecessary factor into an experiment the outcome of which is easily predictable. The front door is needlessly nailed shut with zinc sulfate while the back door is invitingly opened by trauma.

The weight of evidence available today is definitely in favor of the nasopharyngeal portal of entry and affords ample justification for a clinical trial of spraying methods. At the same time if anything of value is to be derived from such studies, they must be done with due regard for technique and be properly controlled.

EDWIN H. LENNETTE, M.D., Chicago
Research Associate, Department of Bacteriology
and Parasitology, the University of Chicago

THE SUN AND SULFANILAMIDE

To the Editor—I note a number of cases reported in *THE JOURNAL*, September 25, page 1036, in which toxic skin manifestations have occurred with the use of sulfanilamide in which exposure to the sun seems to be a factor.

A white man, aged 25, weighing 160 pounds (73 kg.), was seen June 27 suffering from acute gonorrheal urethritis of two days' duration. He was placed on sulfanilamide 20 grains (13 Gm.) four times a day for the first day and 15 grains (1 Gm.) four times a day thereafter. He was also given by injection a filtrate preparation of the gonococcus. Seven days later he was feeling well except that he complained of some dizziness. That afternoon he sat in the hot Western Kansas sun on the running board of a car for about an hour with his sleeves rolled up, shirt open and hatless. During the night he awakened because he thought he was choking. After coughing a while his choking sensation disappeared and he went back to sleep only to be awakened again a few hours later with a chill. I saw him early that morning at which time his lips and nails were cyanotic, the temperature was 103, and an urticarial type of rash covered his face, neck, hands and arms corresponding to the areas exposed to the sun. There was considerable swelling of the hands, and the face was swollen so much that both eyes were completely closed. Curiously enough he did not feel particularly ill. Sulfanilamide was discontinued and within three days all symptoms, including the urethral discharge, had entirely disappeared.

WENDELL A. GROSJEAN, M.D., Colby, Kan.

CHOLESTEROL AND ATHEROSCLEROSIS

To the Editor—In the clinical lecture on "Disturbance of the Cardiovascular System in Nutritional Deficiency" by Drs. Soma Weiss and Robert W. Wilkins (*THE JOURNAL*, September 4, p. 786) occurs the following sentence: "It has been amply demonstrated that feeding of cholesterol to certain species of animals can induce atherosclerosis or, rather, 'cholesterinsteatosis,' and through it heart disease." Cholesterinsteatosis indeed! The implication, as I take it, is that the condition produced in rabbits by cholesterol feeding is analogous to the lipoidoses, marked by the diffuse permanent storage of fats in the tissues. It is true that in the attempt to produce rapidly atherosclerosis in rabbits there is established a temporary steatosis. When cholesterol feeding is discontinued the condition progressively subsides and there remains a permanent disease of the arteries, a true atherosclerosis, comparable to the natural disease in man. For example a rabbit had been fed 74 Gm. of cholesterol over a period of seven months and had

received none of the lipid for the ensuing two years and one month before its death. At autopsy there was no steatosis. Frozen sections of the liver and spleen, usual depositories of lipid, revealed no anisotropic material under polariscopic examination, and sections stained for fat were negative. Even the adrenals were of less than average size, the cortex relatively poor in anisotropic material. The aorta shows marked dilatation of the arch and upper thoracic portion with widespread calcification, the lesions tallying with those encountered in advanced human atherosclerosis, particularly the senile type. Advanced atherosclerosis of varying degree and without steatosis is found in all rabbits fed an adequate amount of cholesterol and permitted to live following cessation of feeding, as in the case of this animal.

A second sentence in the paper reads "The significance of the cholesterol content of the diet in the causation of human atherosclerosis, on the other hand, is not established." Perhaps the largest human experiment in pathogenesis in medical history was carried out in the period from 192 to 1930 in the use of high fat diets in diabetes. Cream, butter and eggs, rich in cholesterol, were the common sources of the fats. The production of atherosclerosis on this diet even in children, and the absence of these lesions in the following period under diets poor in cholesterol, furnish to the ordinary understanding at least significant evidence that cholesterol was the cause of the lesions. Finally I have been able to demonstrate in studies of human aortic lesions (Atherosclerosis. Special Consideration of Aortic Lesions, *Arch Path* 21:419 [April] 1936) the apparent etiologic relation of cholesterol to the various stages of the human disease. In a word, atherosclerosis, whether in the experimental animal or in man, has been produced by but one agent, i. e., cholesterol.

TIMOTHY LEAPY, M.D., Boston

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SUBCUTANEOUS ADMINISTRATION OF OXYGEN IN PNEUMONIA

To the Editor—Can you give me information about the subcutaneous use of oxygen in pneumonia? Also technique?

L. M. MEEK, M.D., Glendora, Miss.

ANSWER—Oxygen is given in pneumonia to overcome anoxia which may be induced by increased demand for oxygen (due to increased metabolism) or by interference with access of oxygen in the air to venous blood in the alveoli. The latter may be due to closure of the alveoli with exudate or the bronchioles with mucus or froth, which reduces the portal or surface for gas interchange. Sufficient oxygen may be forced into the venous blood through a restricted portal by increasing the gradient between alveolar oxygen and venous blood oxygen and is accomplished by increasing the percentage of oxygen or its partial pressure in the air breathed. When as in pulmonary edema most of the alveolar intruments and bronchioles are filled with froth, the obstructing film may be broken by increasing the actual pressure (to about 10 cm. of water in inspiration) against which the patient breathes. This procedure enlarges the portal for gas exchange and permits better absorption of oxygen and improved escape of carbon dioxide and moisture.

Unless from 300 to 400 cc. of oxygen is absorbed each minute the hemoglobin of the body will not be saturated with oxygen. When unsaturation is as much as 15 per cent in pneumonia the prognosis is distinctly bad. The circulation fails. Failure of the circulation in pneumonia may be due either to lack of oxygen, retention of carbon dioxide or water, bacteremia or exhaustion of essential ingredients in the body. Evans and Durshodwe remark that patients with failing circulation in pneumonia have not been helped by subcutaneous injections of oxygen. If 4000 cc. of oxygen should be injected under the skin of the abdomen, chest and thighs it would take from ten

to twenty-four hours for it to disappear, or, if the absorption should be rapid and uniform, about 6½ cc. per minute (less than 2 per cent of the oxygen required each minute).

Absorption of oxygen depends on a large surface with open capillaries. In the lungs the alveoli provide approximately 80 square meters of such surface. There is a large margin of safety. When oxygen is injected into the tissue planes or subcutaneous tissues the capillaries in the walls of the artefactual alveoli are constricted by pressure, which interferes with absorption of the gas.

The procedure is painful and if its tissues are infiltrated interferes with physical examination of the chest. A vein may be penetrated with gas and air embolism induced.

Recently Evans and Durshodwe have discussed the subcutaneous use of oxygen in pneumonia (*Current Researches in Anesth. & Analg.* 16:211 [June-Aug.] 1937). Those given subcutaneous oxygen simultaneously with or subsequent to oxygen by inhalation were not critically studied with reference to the other factors that make for recovery or death in the pneumonias.

Any painful stimulus such as pricking with a hypodermic needle or subcutaneous injection of an irritating drug, increases the depth of respiration and the activity of the heart and temporarily reduces mild degrees of anoxia. Subcutaneous injection of oxygen offers little promise of assistance in such emergencies as pulmonary edema or obstruction of the bronchus of the lung by secretion. It does not relieve the essential difficulty of gas exchange in pneumonia.

The injection of oxygen may be given directly from a low pressure oxygen cylinder with a 1¼ needle 27 gage with a flow meter calibrated in cubic centimeters per minute. A pneumothorax apparatus or 20 cc. syringe with an attached two way stopcock may be employed and the oxygen taken from a glass cylinder immersed in water. The latter method is preferred as being less dangerous and more easy to control if the needle has accidentally perforated a subcutaneous vein.

BULLOUS IMPETIGO OR TOXIC ERYTHEMA

To the Editor—A white woman aged 42 at 10 years of age had a disease which according to her description was pemphigus. Since then she has been unable to perspire on any part of her body except her face. She has a marked sensitivity to soap and water and has to bathe with olive oil. At times her body becomes very hot and radiates an enormous amount of heat especially if she takes a tub bath. At this time she is unable to sleep under bedclothes and has to cool herself by removing the covers and continually turning her pillow. The skin appears normal in every respect and she has been in apparent good health otherwise. What are the possible diagnoses here? Could the pemphigus have been the etiologic factor? What treatment would you suggest?

M. D. California

ANSWER—It is possible, but improbable that the patient had pemphigus. While children may have pemphigus, few survive for thirty-two years. It is more probable that she had a bullous impetigo, an erythema multiforme, dermatitis herpetiformis, a drug eruption or a bullous toxic erythema.

People especially women who do not visibly perspire are not uncommon. This does not mean of course, that they do not perspire at all, for they do produce invisible perspiration. Evaporation of sweat dissipates heat and this is an important method the body uses in ridding itself of excess heat. When the skin cannot sweat the body tends to accumulate and hold for a longer time heat imparted to it, such as from a warm bath.

Sweat contains appreciable quantities of oil and this helps to lubricate the skin. A dry harsh skin tends to be sensitive to soap and water, because these remove and further reduce the already deficient supplies of oil present.

There are other possible factors that should be searched for. Is there a hypothyroidism to account for the dry skin? What is the patient's basal metabolism? Could these heat episodes be part of the menopause?

The sweat glands are under the control of the vegetative nervous system and lesions of the nervous system have been found post mortem in pemphigus. Is it therefore conceivable though not probable that the deficient sweating is a sequel to a pemphigus?

The more probable diagnoses of the dermatosis present at the age of 10 have been mentioned. Hypothyroidism and the menopause are possibilities at the present time. A functional nervous disturbance is quite possible. If nothing positive can be found in an ordinary physical and laboratory examination of the patient the efforts of a neurologist may be fruitful.

The patient should use little soap and water and continue to use some bland oil or grease such as the olive oil she now is using. Her baths should not be hot but reasonably cool or as cool as comfortable. The clothes should be light and care

should be taken not to become overheated in summer. If hypothyroidism or the menopause are present, appropriate measures should be instituted. It would perhaps be inadvisable to resort to sweat stimulating drugs, such as physostigmine and pilocarpine, for prolonged periods. Certainly their use in this case should be begun and continued with caution.

TREATMENT OF EDENTULOUS PATIENT

To the Editor—A physician aged 55 developed a chronic sinusitis following an attack of influenza. Prolonged treatment included frequent punctures and irrigations of both antrums and sphenoids. There was no pus on irrigation. X-ray examination showed the membrane of the affected sinuses to be hyperplastic the linings being considerably thickened. Owing to an atrophic condition that developed in the mucosa of the nose postnasal space and pharynx he was advised against any operative procedure radical or otherwise being told that the membrane of the sinuses would not regenerate. Roentgenograms taken in December 1935 showed a progressive rarefaction of the bony walls. The nose is dry and there is a thick tenacious discharge both forward and posteriorly which it is extremely hard to dislodge and tends to form crusts. There is considerable fifth nerve neuralgia and for a year or more he has had a generalized multiple neuritis with accompanying muscular weakness and stiffness. Three years ago it became necessary for him to have his teeth removed. His bite is irregular—a forward and cross bite—but prominent dentists assured him that it could be accommodated. Extensive alveolar resection was done by an extractionist. Since then he has had seven sets of dentures but is still unable to eat any but the softest food. What little lower ridge remains is thin and is on the lingual side of the mandible leaving a wide ledge on the labial side. The denture rests on this ledge and on what remains of the ridge. Where the upper ridge should be is scar tissue. The slightest pressure of the plates is extremely painful. With the dentures out the gums cannot be made to touch within an inch. Since the teeth were removed there has been a persistent drawing burning sensation in the mouth and to a lesser degree in the nose. This sensation is greatly aggravated by a mere puff of a cigaret and he has been forced to give up smoking after smoking for many years. The membrane of the mouth is not inflamed but the tongue becomes red after eating or when protruded. The neuritis manifests itself in sudden stabbing and dull boring pains in the extremities and the areas supplied by the fifth nerve. Neurologic examination is negative for spinal involvement. The blood Wassermann reaction is negative. Blood chemistry gives negative results. Red blood cells number 4,390,000 the differential count is normal. Hemoglobin (Dare) is from 76 to 86 per cent. Urinalysis gives negative results excepting for a persistent specific gravity of 1.010. A gastrointestinal series was negative excepting for numerous diverticula in the descending colon and sigmoid flexure. The soft diet necessitated by inability to chew causes constipation with dry pasty stools. A culture from the nose and throat shows *Staphylococcus albus* haemolyticus in heavy growth. *Streptococcus haemolyticus* and *Streptococcus viridans*. At present the patient is taking an autogenous vaccine. 1. Is an atrophic condition a contraindication to operative work on the sinuses? 2. Is autogenous vaccine beneficial in such a case? Over how long a period of time should it be given? What treatment would you suggest for this nasal condition? 3. Is there any soft material that is used in dental plates which will relieve the pain of pressure? Will the tissue over the mandible toughen? What treatment could be used to toughen it? Why does tobacco smoke cause so much irritation? What is the cause of the severe burning drawing sensation and what can be done to relieve it? 4. In view of the mouth and intestinal conditions would the neuritis be due to a vitamin B deficiency? What is the best source of vitamin B orally? Intramuscularly? I will certainly appreciate anything you may be able to suggest that might be beneficial in any of these conditions.

M. D. Washington, D. C.

ANSWER—1. Surgical treatment in the nose and sinuses seems to be contraindicated by both the local and the general conditions. Autogenous vaccines are not likely to have beneficial action. Vitamins A, B and G, both in food and in concentrates with calcium and phosphorus, may be helpful.

2. Dentures are sometimes made for such patients with a velum rubber border or cushion for the base, in some cases, if properly made, they provide relief. A mildly astringent mouth wash may help to toughen and relieve the sensitiveness of the mucous membrane. Tincture of myrrh, 5 cc in half a glass of water, sometimes helps. Burning and drawing sensations are common symptoms of vitamin deficiency. The hypersensitivity of the mucous membrane is the cause of the reaction to tobacco. It will probably disappear as the conditions improve.

The oral surgery was probably injudicious. Some such cases can be improved by deepening the vestibules, both in the maxilla and in the mandible but this can be done only in some cases and should not be attempted by one not experienced in the technique and competent to evaluate the conditions.

Such a climate as Arizona might aid recovery. Damp cold climatic conditions aggravate such cases.

3. Several articles have appeared on diet for edentulous patients. There was a specific article on this subject by Dr. Robert Lelon Ladd which appeared in the December 1934 issue of the *Illness Bulletin* of the University of Illinois College of Dentistry (vol. 18, No. 2). According to this article a diet could be worked out that would meet all the requisites of a normal diet—that is, contain enough calories to keep the normal

body weight, supply an adequate amount of proteins, fats and vitamins, and sufficient bulk to establish a normal bowel movement every day.

UNBREAKABLE LENSES

To the Editor—Several of my patients have inquired regarding unbreakable lenses used in spectacles manufactured by the Unbreakable Lens Company of America Inc. in Beverly Hills, Cal. I have had no personal experience with this product and am therefore hesitant and reluctant to recommend the substitution of this lens for ordinary glass. What information is available on this product?

GEORGE H. LEWIS, M.D., Los Angeles

ANSWER—The Unbreakable Lens Company of America Incorporated, manufactures an unbreakable lens called the Tulca. The lenses are molded from a clear transparent material called plexiglas. The index of refraction of the Tulca lens is 1.4875 on the sodium line D at 30°C. Consequently the strength of the lens must be neutralized with lenses made of ordinary glass lenses. The samples that were supplied on request were of clear transparency, comparing favorably with the ordinary glass lenses. The absorption of spectral light (measured roughly) was approximately that of spectacle lenses of similar thickness. Spectroscopically, the absorption was practically identical with ordinary glass lenses. The great difference lies in the weight of the lens, owing to the low specific gravity of plexiglas, Tulca lenses are approximately 60 per cent lighter than glass lenses of the same size and strength. The other advantage is that the Tulca lens does not break or crack even under the application of great force. The advantages of the Tulca lenses are that they scratch easily. When dropped into boiling water Tulca lenses become immediately distorted. They catch fire readily and burn with the same type of flame as does celluloid. The Tulca lens, being a molded structure, cannot be ground or polished although it can be edged and drilled as required.

At present the cost of Tulca lenses is somewhat greater than glass lenses of similar strength. It is believed that the unbreakable lenses are desirable in sports and in cases in which light weight lenses are needed.

X-RAY THERAPY IN WHOOPING COUGH

To the Editor—A daughter whose children have had a bad attack of whooping cough writes that her physician is giving the children x-ray treatments once a week. I did not know that the x-rays were used in this disease until I looked up the subject in the textbooks and even then found little about them and that little seemed to doubt their effectiveness. What is the consensus regarding its use?

W. M. WALLIKER, M.D., Clinton Iowa

ANSWER—Untreated whooping cough is not only a self limited disease, but it varies greatly in duration and severity. The paroxysmal stage ranges from one to ten or more weeks. One can rarely predict whether a child will have a light, medium or severe case. The mild and medium cases far outnumber the severe. Among the factors that seem to influence its course may be mentioned age, previous health, season and intercurrent respiratory tract infections. The clinical course is more likely to be mild in the summer, in robust children (whose specific defense powers are usually well developed) and in a healthful environment. Conversely, many of the severe cases and most of the deaths occur during the first two years of life in rachitic infants of the poor, who are prone to contract complicating bronchopneumonia in winter or enteritis in summer. Furthermore, allergic children of any age, especially those subject to bronchitis, may have severe and frequent paroxysms for many months in spite of therapeutic measures.

In carefully controlled and well conducted clinical observations on pertussis patients, Faber and Struble (Does Roentgen Rays Modify the Course of Whooping Cough? *The Journal of Sept. 12, 1925*, p. 815) showed that x-ray treatment has no therapeutic effect. Sauer and Hambrecht (Whooping Cough: Vaccine Therapy or Early Diagnosis, *ibid.* Dec. 15, 1925, p. 1861) in a carefully controlled series of 100 pertussis patients of various ages and at the various seasons show that pertussis vaccine has no therapeutic effect. Miller and Singer (Roentgen Rays in the Variable Course of Pertussis: Does Haemophilus Pertussis Undenatured Bacterial Antigen Alter It? *Immunology Child* 53:720 [March] 1937) in a painstakingly controlled study show that undenatured bacterial antigen is of questionable therapeutic value. The use of strong sedatives in infants and frail children is hazardous.

Until the peak of the paroxysmal stage has passed the following precautions are of definite value: bed rest for several days in fresh warm air (outdoors during the entire day in clear weather) easily digestible vitamin rich foods, the avoidance of

drafts, dust and smoke, and prevention of secondary infections For infants and frail children, a flawless aseptic nursery technic should shorten the clinical course lighten the paroxysms and markedly decrease pertussis mortality

CONVULSIONS AFTER LUMBAR PUNCTURE

To the Editor—Kindly supply me with references on the subject of convulsive seizures following lumbar punctures and also inform me whether a direct relationship can be established between a lumbar puncture and convulsive seizures occurring from six to seven hours after the puncture

M D New York

ANSWER—We have no available references on the subject of convulsive seizures following lumbar puncture Convulsions following lumbar puncture are exceedingly rare We have knowledge of convulsions occurring following lumbar puncture in cases of epilepsy and tumor of the brain As a general rule it would be very difficult to establish any relationship between a lumbar puncture and convulsive seizures occurring from six to seven hours after the puncture unless the patient had some cerebral disease A convulsion may rarely occur after a lumbar puncture for the induction of spinal anesthesia or following the introduction of a therapeutic agent into the subarachnoid space

The following references concerning convulsive seizures following lumbar puncture and injection of procaine are available

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TOXIC ERYTHEMA FROM QUININE

To the Editor—A man aged 60 who had a throat infection with symptoms similar to grip was given quinine and forty eight hours later developed erythema and swelling of the skin over the entire body About five days later the swelling and also a fine desquamation disappeared The palmar surface of the hands and the soles of the feet peeled in a solid piece The man says that he has had a similar condition in so called scarlet fever six times previously I should like an opinion

ΛΛΟΧ BRITAIN M D Spencerport N Y

ANSWER—Scarlatiniform erythema belongs to the large group of toxic dermatides and may be caused by sensitization to drugs, foreign proteins or foods, toxins from the intestinal tract, toxins of the infectious fevers, septicemia, tonsillitis, rheumatism, influenza, abscesses, empyema, peritonitis, chronic infectious foci, gonorrhea and nephritis

Whether the particular attack was due to quinine a common offender, or to the attack of influenza can be determined by an experimental dose of quinine The patient should be willing to submit to this test, for if it succeeds he will be able to avoid future attacks

The onset of the eruption on other parts than the upper part of the chest and neck, its large macular character with sharp limitation and areas of uninvolved skin, the absence of circumoral pallor, the absence of swelling of the tonsils and fauces, the absence of a heavily coated tongue with red papillae showing through, and the absence of a fine macular eruption on the palate are against scarlatina Slight fever with moderate increase in pulse rate, no vomiting, no leukocytosis and no blanching about the point of intradermal injection of scarlet fever antitoxin, from 0.1 to 0.2 cc. weigh heavily against scarlatina in favor of the erythema Early and rapid desquamation and the history of repeated attacks are also valuable evidence in favor of the scarlatiniform erythema

DIAGNOSIS AND GONORRHEA

To the Editor—A nurse in a hospital in which I am a member of the staff was married about four weeks ago Two weeks later she developed symptoms of burning and frequency on urination and on investigation gonococci were revealed in smears both from the cervix and from the urethra Specific organisms were recovered also from the husband following prostatic massage It was recommended that she be treated for a period of four to six weeks and take leave from her work during that time She returned after absenting herself for about ten days with letters from two physicians who stated that there were no gonococci in smears In view of this she wishes to return to work 1 Assuming that the smears which were first taken were reliably interpreted is it possible that she is now cured? 2 What is the minimum time she should undergo treatment? 3 What is the minimum time she should remain away from attending patients? There seems to be some controversy regarding the handling of this case and a speedy and pointed reply would be earnestly appreciated

M D New Mexico

ANSWER—1 It may be possible that the patient has been cured after treatment for ten days—anything is possible in medicine On the other hand, to be cured of a gonococcal infection after ten days is a rarity The indication to make more smears is perfectly obvious Smears should be made not only from the cervix and urethra, but also from Skene's glands and Bartholin's glands as well

2 There is no such thing as minimum or maximum time—the patient should be treated until she is free from gonococci as proved by microscopic examination of the smears from the cervix, the urethra and Skene's and Bartholin's glands It is best to take these smears one week apart and after three negative smears have been obtained it might be well to make a culture Furthermore, it might be well in a case of this kind to use provocative measures, such as the use of alcohol and application of 2 per cent silver nitrate to the urethra and then make an examination of the secretion aroused by the silver nitrate

3 The patient may attend patients provided she has instructions as to the proper management of her infection

TREATMENT OF SYPHILIS

To the Editor—A woman aged 27 has been under my care for treatment of syphilis since Oct 4 1934 The Wassermann reaction following a seven months stillbirth at that time was plus 4 The patient left me under the impression that she was unaware of her condition and I was unable to determine at that time the length of infection I instituted treatment as follows (all injections were at weekly intervals) neoarsphenamine 0.6 Gm a bismuth compound 0.2 Gm During the courses of bismuth I had her take orally for varying periods potassium iodide 2 grains (0.13 Gm) and red mercuric iodide one twelfth grain (0.005 Gm) three times a day 1 Neoarsphenamine ten injections Dec 6 1934 Wassermann reaction plus 4 2 Bismuth compound four injections Jan 10 1935 Wassermann reaction plus 4 3 Neoarsphenamine eight injections Feb 28 1935 Wassermann reaction plus 4 4 Bismuth compound six injections April 18 1935 Wassermann reaction plus 4 5 Neoarsphenamine eight injections June 6 1935 Wassermann reaction plus 4 6 Bismuth compound eight injections Aug 16 1935 Wassermann reaction plus 4 7 Neoarsphenamine eight injections Sept 27 1935 Wassermann reaction plus 4 8 Bismuth compound ten injections Dec 14 1935 Wassermann reaction plus 3 9 Neoarsphenamine six injections Jan 24 1936 Wassermann reaction plus 4 10 Bismuth compound twelve injections April 18 1936 Wassermann reaction plus 1 At this stage the patient admitted the probability of infection in 1930 with about six injections in the arm Spinal fluid examination was done at this time and was negative A rest period was given until July 11 1936 when the Wassermann reaction was plus 2 11 Bismuth compound twelve injections Sept 26 1936 Kahn precipitation test strongly positive Kline precipitation test strongly positive Kolmer complement fixation strongly positive 12 Bismuth compound twelve injections Dec 19 1936 Kline precipitation test weakly positive Kahn precipitation test doubtful reaction Kolmer complement fixation very strongly positive 13 Bismuth compound twelve injections March 15 1937 Kline precipitation test weakly positive Kahn precipitation test weakly positive Kolmer complement fixation very strongly positive During treatment the patient has been otherwise in very good health Repeated physical and neurologic examinations have been negative I would appreciate your suggestions as to any future course that I may pursue

M D Pennsylvania

ANSWER—Apparently from October 1934 to December 1935 the patient has received a total of forty injections of an arsenical and seventy-six injections of a bismuth preparation It probably would have been better if continued rather than intermittent treatment had been used for the patient at least in the beginning but since the lumbar puncture is negative and repeated physical and neurologic examinations have been negative, there is not much need for concern provided the cardiovascular apparatus has been examined carefully It might be well to give the patient a short course of a bismuth preparation twice a year for the next year There need be no particular concern over the positive serologic reaction After all one is treating the patient and not the reaction She has had quite a little

treatment already and seems to be in good condition. Even if the Wassermann reaction does not turn to negative, there is no cause for alarm in this particular case. After the year of further therapy is completed physical examination should be done once a year, along with the general check up that every person should have.

GONORRHEA OR NONSPECIFIC URETHRITIS

To the Editor—A patient states that about two and one-half years ago he was exposed to venereal infection. Twenty-four hours after the exposure he noticed a slight itching at the meatus associated with a mild purulent discharge. This was never profuse and after about ten days treatment with local injections the symptoms disappeared. There was no further treatment. The presence of the gonococcus in the discharge was not determined at that time. About five months ago the patient was married. Sexual indulgence was moderate. Recently there was intercourse when the wife was barely over a period. Two days later the patient noticed a slight burning after voiding and the following morning a drop of pus was seen at the meatus. No further pus appeared until about a week later after the patient engaged in strenuous exercise. Three different smears were apparently negative for intracellular diplococci. The first urine passed showed a few shreds. The second glass was apparently clear. The wife appeared to be free from infection. Is it likely that the infection two and one-half years ago was gonorrhea and that the patient now has a recurrence? If the first attack was a nonspecific infection would recurrences be likely as in gonorrhea? Does a recurrence of any urethral infection indicate that the disease has spread posteriorly and that the prostate is involved? How much value is the complement fixation test in a case of this kind? Is the treatment of urethral infections the same regardless of the causative organism? M.D., New York

ANSWER—Since all the smears were negative, it is unlikely that the infection two and one-half years ago was gonorrhea. The initial symptoms were probably due to nonspecific prostaticitis with secondary urethral discharge. It is well known that prostaticitis may remain symptomless for a long period, and it would hence be advisable to examine the prostatic secretion for the presence of pus and bacteria. A localized low grade infection of the urethra is a rare occurrence following intercourse near the menstrual period. The complement fixation test in a case of this kind is of value only when the reaction is positive, a negative reaction is almost certain to be obtained if the test is done by a reliable laboratory. The treatment of urethral infection is not the same for all causative organisms. In most nonspecific infections irrigation with weak, warm solutions of potassium permanganate or oxymercure of mercury are indicated. Oral administration of a good urinary antiseptic may also be employed. If prostaticitis is found, massage is indicated, which in itself usually results in improvement of the urethritis.

TOXICITY OF HALOWAX AND CHLORINATED NAPHTHALENES

To the Editor—I should like to have information on the prevention and treatment of acne resulting from working in Halowax. This substance is manufactured by the Halowax Corporation, 247 Park Avenue, New York and is used in treating certain asbestos products in a plant here. Every worker in Halowax has developed the acne in spite of protecting his arms, face, neck, and legs by applications of mercuriolate, certain sulfur ointments or the commercial substance Protecto before going to work. The skin lesions which begin as papules and gradually become pustular are scattered mostly on the exposed parts, the face and arms. However, quite a few appear also on the trunk and legs. Autogenous vaccines seem to be of no use in treating them. M.D. Pennsylvania

ANSWER—Halowax is the trade name for a series of products that are or contain chlorinated naphthalenes. As long as twenty years ago, skin diseases from chlorinated naphthalenes were described under the name "perna disease" (perchloronaphthalene disease). More recently skin injuries have been described by Fulton and Matthews (The Dermatological and Systemic Effects of Exposure to Hexachloronaphthalene and Chloro-Diphenyl, Special Bulletin 43 March 16 1936 of the Department of Labor and Industry of the Commonwealth of Pennsylvania). This paper presents less extensive data referable to systemic disease. Generally much less is known about the systemic action of various chlorinated naphthalenes in comparison with the dermatoses that they produce. The fumes from these substances induce a general malaise, profound weakness, unstable gait, cardiac weakness, jaundice, toxic nephritis, hematuria, enlargement of the spleen and neuritis, including optic neuritis. A brief discussion may be found in the International Labor Office's Occupation and Health, volume 2, page 306. In connection with the use of chlorinated naphthalenes for insulation purposes for electrical transmission equipment attention has been attracted to their toxic properties in various Atlantic Coast states including Connecticut and New York. Several fatalities have occurred. The report of an extensive investigation of the toxic properties of vapors from Halowaxes conducted by Drinker and Warren, together with discussions by other authorities, appears in the

Journal of Industrial Hygiene and Toxicology (1936 [Vol. 1] 1937). Additional information probably may be procured from the Department of Public Health of the State of Connecticut in Hartford.

MASKS AND ISOLATION IN COLDS

To the Editor—Often it is the duty of nurse, mother or physician while having a cold to examine, feed or be near a child that has respiratory infection. Naturally one doesn't want the child to catch a cold. 1. Does wearing a mask (as in an operating room) help? 2. What distance should an unmasked person keep (a) outdoors? (b) in a closed room? 3. Is there any medication that can be sprayed in the nose and throat of the infected person that will prevent his giving the child the cold even though the effects of such a spray are of only short duration? M.D., New York

ANSWER—1. The wearing of a mask may tend to lessen the likelihood of transmitting a cold to a child. This is not to be regarded as positive protection, for a cold may be transmitted even though a mask is worn.

2. (a) Outdoors an unmasked person should keep several yards away. (b) Indoors it is best for an unmasked person to keep entirely away (i.e., out of the room). By using the precautionary measures, the child's safety will be relatively assured.

3. Many medicaments have thus far been tried in an effort to prevent the transmission of a cold, with little or no avail. There is no sure means of preventing the transmission of the cold from an infected person to one not involved, except the complete isolation of the infected one.

ENLARGEMENT OF NECK

To the Editor—A man aged 67, has a peculiar swelling on both sides of his neck. He tells me that the condition began about six months ago. There is no tenderness and no mass. The lateral sides of the neck are simply enlarged. Turning the head causes the enlargement on the opposite side to be more perceptible. The patient is rather heavy and is the picture of health in spite of mild diabetes six or seven years ago. He has consumed quite a bit of liquor in his life. There is no enlargement of the thyroid gland and his heart is normal as is the urine. I could find nothing in the throat that might account for the condition. Please let me know the possibilities in this case. He tells me that he wears a leather collar and formerly wore a 16.

JAMES M. ACKER, M.D. Aberdeen, Md.

ANSWER—If one can eliminate the possibility of neoplasms of glandular or lymph nodal masses, the most likely explanation for symmetrical, painless enlargement of the neck is diffuse lipomatosis. The condition has been described as "fettishals" and may be related in some way to Dercum's disease. The deposition of fat may be confined to the cervical region, there may be associated lipoma or diffuse fatty infiltration of other portions of the body. Adiposity of this type not infrequently is noted in middle aged or elderly men and alcohol has been considered an etiologic factor.

Among the other diagnostic possibilities must be considered that of mediastinal tumor or aneurysm, such conditions usually are associated with other signs of intrathoracic pressure and venous engorgement of the face and neck. A roentgenogram of the thorax would eliminate these possibilities. Pulmonary emphysema also may cause some increase in the size of the neck. Occasionally cervical enlargement seems to be related to hypertrophy of the sternomastoid muscle. This apparently is of no clinical significance and is not related to any of the usual types of myopathy.

ELECTRICAL REFRIGERATION

To the Editor—It has come to my attention recently that certain doctors are advising their patients and in particular their diabetic patients that the new electric refrigerators render the food stored in them unsafe and that the regular ice refrigerators should be used. One of the reasons given is dehydration of the food. Will you kindly give an authoritative opinion on this subject?

LEO D. SMITH, M.D. Stockton, Cal.

ANSWER—A number of factors enter into the safe refrigeration of foods. Among them may be mentioned the temperature in various parts of the refrigerator, the circulation of air and the humidity. Humidity, it has been claimed, is an essential difference between the ice refrigerator and the mechanical one. The circulation of air and the condensation of water on the coils have a drying tendency in the mechanical refrigerator. All liquids and some other foods, especially cheese and butter, should therefore be covered in the mechanical refrigerator. Controlled conditions of humidity, however, have been considered in the construction of the newest refrigerators. The factors have been discussed in greater detail by Warr, C. F. in *Hygiene* (12:626 [July] 1934 and 13:701 [Aug.] 1935).

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL October 16 page 1301

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination Feb 14 16, May 9 11 (limited to a few centers) June 20 22 and Sept 12 14 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written examination for Group B applicants will be held in various cities throughout the country in April. Oral examination for Group A and B applicants will be held at San Francisco in June.* Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written examinations and review of case histories for Group B candidates will be held in various cities of the United States and Canada Nov 6 and Feb 5. Application must be filed at least sixty days prior to these dates. General oral clinical and pathological examinations for all candidates (Groups A and B) will be conducted in San Francisco June 13 14. Application for admission to Group A examinations must be on file before April 1.* Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY San Francisco June 13 *All applications and case reports in duplicate must be filed at least sixty days before the date of examination.* Sec Dr John Green 3720 Washington Blvd St Louis Mo

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Los Angeles Jan 14 15 Sec Dr Fremont A Chandler 6 N Michigan Ave Chicago

AMERICAN BOARD OF PEDIATRICS Los Angeles Nov 7 Boston Nov 14 and New Orleans Nov 30 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec 28 *Applications to be acted upon must be in the hands of the Secretary by October 25.* Sec Dr Walter Freeman 1028 Connecticut Ave NW Washington D C

AMERICAN BOARD OF RADIOLOGY San Francisco June 10 12 Sec Dr Byrl R Kirklin 102 110 Second Ave SW Rochester Minn

Maryland June Examination

Dr John T O'Mara, secretary, Board of Medical Examiners of Maryland, reports the written examination held at Baltimore, June 15 18, 1937. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and sixty eight candidates were examined, 145 of whom passed and 23 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
George Washington University School of Medicine (1937) 86 6 92		(1936)	84 7
Georgetown University School of Medicine (1937) 82 6		(1934)	86 6
Howard University College of Medicine		(1935)	81
Northwestern University Medical School		(1936)	82 3
Johns Hopkins University School of Medicine (1934) 82 7 89 8 (1936) 77 3 83 85 5 91 5 (1937) 82 8 3 3 81 7 84 2 85 2 85 4 85 4 85 5 86 1 86 2 86 2 86 3 86 3 86 4 86 7 87 87 87 8 88 88 88 5 89 89 3 90 92 92 5 92 6 93 3		(1933)	84
University of Maryland School of Medicine and College of Physicians and Surgeons (1937) 76 4 78 78 4 78 5 78 7 78 7 79 4 79 6 79 7 79 7 80 3 80 5 80 6 81 1 81 7 81 7 82 1 82 2 82 4 82 6 83 83 83 83 83 83 83 83 2 83 2 83 3 83 4 81 5 83 6 83 7 84 84 84 1 84 3 85 85 85 85 85 85 85 1 85 2 85 4 85 5 85 7 86 86 86 86 86 86 86 1 86 4 86 5 86 6 87 87 2 87 3 87 4 87 5 88 3 88 6 89 89 89 2 89 3 89 4 89 7 90 1 90 2 90 2 90 6 91 2 91 2 92 92 92 2 94 2		(1935)	75 2
Harvard University Medical School (1937) 82 90 1		(1936)	85 5
Washington University School of Medicine		(1936)	83 4
Cornell University Medical College		(1936)	81
Jefferson Medical College of Philadelphia (1935) 90 3		(1931)	83
University of Western Ontario Medical School		(1929)	80 5
Hessische Ludwigs Universität Medizinische Fakultät Gießen (1918) 79 5 *		(1922)	77 *
Universität Heidelberg Medizinische Fakultät (1921)		(1921)	78 *
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia (1936)		(1936)	75 1 *
Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia (1936)		(1936)	81 6 *
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1936) 78 1 * 82 3 *		(1935)	78 5 *
Regia Università di Napoli Facoltà di Medicina e Chirurgia (1935)		(1935)	89 *
Universität Bern Medizinische Fakultät (1935) 80 4 *		(1935)	81 3

School	FAILED	Year Grad
Howard University College of Medicine (1931) (1932) *		(1931)
Johns Hopkins University School of Medicine (1937) *		(1937)
Univerzita Karlova Fakulta Lekarska Praha (1935) *		(1935)
Universität Heidelberg Medizinische Fakultät (1922) *		(1922)

Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia (1935 3) *	(1936) *
Regia Università degli Studi di Padova Facoltà di Medicina e Chirurgia (1934)	(1934)
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia (1934 2) *	(1935 5) *
Regia Università di Napoli Facoltà di Medicina e Chirurgia (1933) *	(1936) *
Universität Zürich Medizinische Fakultät (1935)	(1935)
Université de Lausanne Faculté de Médecine (1934) *	(1934) *

Twenty-four physicians were licensed by reciprocity and six physicians were licensed by endorsement from January 21 through July 29. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Medical Evangelists (1929) District of Columbia (1927) West Virginia		(1931)	Washington (1912)
Georgetown University School of Medicine (1920) Dist Colum		(1920)	Tennessee (1934)
Howard University College of Medicine (1928) Louisiana		(1928)	Illinois (1935)
University of Illinois College of Medicine (1935)		(1935)	Missouri (1928)
Tulane University of Louisiana School of Medicine (1920) New York		(1920)	New Jersey (1924)
Johns Hopkins University School of Medicine (1918) Michigan		(1918)	Missouri (1905)
Tufts College Medical School (1934) Nebraska		(1934)	Nebraska (1926)
Detroit College of Medicine and Surgery (1935) New York		(1935)	Oregon (1933)
St Louis University School of Medicine (1935) Penna		(1935)	Penna (1929)
University of Nebraska College of Medicine (1936) Tennessee		(1936)	Texas (1935)
Columbia Univ Col of Physicians and Surgeons (1927) Virginia		(1927)	Virginia (1933)
Cornell University Medical College (1933) New Jersey		(1933)	
University of Oregon Medical School (1933) New Jersey		(1933)	
Hahnemann Medical Col and Hosp of Philadelphia (1933) New Jersey		(1933)	
Jefferson Medical College of Philadelphia (1933) New Jersey		(1933)	
Meharry Medical College (1933) New Jersey		(1933)	
Baylor University College of Medicine (1933) New Jersey		(1933)	
Medical College of Virginia (1933) New Jersey		(1933)	
University of Virginia Department of Medicine (1933) New Jersey		(1933)	
University of St Andrews Conjoint Medical School Scotland (1933) New Jersey		(1933)	

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
College of Medical Evangelists (1936) N B M Ex		(1936) N B M Ex
Yale University School of Medicine (1933) N B M Ex		(1933) N B M Ex
Johns Hopkins University School of Medicine (1935) N B M Ex		(1935) N B M Ex
Duke University School of Medicine (1935) N B M Ex		(1935) N B M Ex
University of Pennsylvania School of Medicine (1920) N B M Ex		(1920) N B M Ex
University of Vermont College of Medicine (1933) N B M Ex		(1933) N B M Ex

* Verification of graduation in process

Texas June Report

Dr T J Crowe, secretary, Texas State Board of Medical Examiners, reports the written examination held at Austin, June 21-23 1937. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. One hundred and eighty-four candidates were examined, 171 of whom passed and 13 failed. One hundred and six applicants were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists (1937)		(1937)	81 3
University of Illinois College of Medicine (1937)		(1937)	83 8
Tulane University of Louisiana School of Medicine (1937) 84 86 9		(1936)	86 4
Washington University School of Medicine (1937) 85 2		(1937)	85 2
University of Pennsylvania School of Medicine (1934) 84		(1934)	84
Baylor University College of Medicine (1937) 76 5		(1937)	76 5
78 3 78 6 80 2 80 5 80 5 80 8 80 8 80 9 81 1 81 4 81 9 82 1 82 2 82 5 82 6 82 8 82 9 83 83 83 1 83 1 83 7 83 8 83 9 84 84 1 84 1 84 1 84 2 84 3 84 3 84 5 84 6 84 8 84 8 85 85 85 2 85 3 85 4 85 4 85 6 85 6 85 7 85 7 86 86 86 3 86 4 86 5 86 7 86 8 86 8 86 9 87 2 87 2 87 5 87 8 88 88 2 88 3 88 3 88 6 88 7 90 2		(1935)	75 2
University of Texas School of Medicine (1936) 87		(1936)	87
79 9 80 80 81 6 81 9 82 1 82 5 83 83 1 83 3 83 4 83 5 83 8 83 9 84 2 84 3 84 3 84 3 84 3 84 5 84 6 84 6 84 7 84 7 84 8 84 9 84 9 84 9 85 85 85 85 85 85 2 85 2 85 5 85 7 85 8 85 9 86 86 86 1 86 3 86 5 86 6 86 7 86 8 86 8 86 9 87 87 87 87 87 3 87 3 87 6 87 7 87 9 88 88 1 88 2 88 5 88 5 88 5 88 5 88 5 89 89 1 89 3 89 4 89 8 89 8 90 90 2 90 5 90 6 91 4 91 6		(1937)	78 9
Albertus Universität Medizinische Fakultät Königsberg (1915)		(1915)	75 *
Friedrich Wilhelms Universität Medizinische Fakultät Berlin (1926)		(1926)	78 7 *
Johann Wolfgang Goethe Universität Medizinische Fakultät Frankfurt am Main (1935)		(1935)	82 6 *
Ludwig Maximilians Universität Medizinische Fakultät München (1919)		(1919)	78 8 *
Universität Heidelberg Medizinische Fakultät (1913)		(1913)	79 3 *
Osteopaths †			75
76 2 76 4 76 6 76 9 77 5 78 4 80 80 81 6 81 7 82 5 82 8 82 9 86 88 4			

School	FAILED	Year Grad
Magyar Kiralyi Pizmany Petrus Tudomanyegyetem Orvosi Fakulta a Budapest		(1916)*
Japan Medical College Tokio		(1910)*
Escuela Medico Militar Mexico D F		(1922)*
Universidad Nacional Facultad de Medicina Mexico D F		(1925)*
Licentiate of the Royal College of Physician of the Royal College of Surgeons Edinburgh and of the Royal Faculty of Physicians and Surgeon Chir -		(1937)
Osteopaths †		3

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine (1936 2) (1937) Arkansas		(1934)	
College of Medical Evangelists (1933) (1935) California		(1931)	N Dakota
University of Colorado School of Medicine		(1935)	Colorado
Georgetown University School of Medicine		(1929)	Michigan
Northwestern University Medical School (1930) Louisiana (1934) Ohio		(1925)	Illinois
Rush Medical College (1924 2) (1935) Illinois		(1905)	Iowa
University of Illinois College of Medicine (1934)		(1935)	Illinois
Indiana University School of Medicine (1935)		(1935)	Indiana
State University of Iowa College of Medicine (1936 2)		(1936 2)	Iowa
University of Kansas School of Medicine (1936)		(1936)	Kansas
Louisville and Hospital Medical College (1908)		(1908)	Kentucky
University of Louisville Medical Department (1910)		(1910)	Kentucky
University of Louisville School of Medicine (1930)		(1933)	Kentucky
Louisiana State University Medical Center (1936)		(1936)	Louisiana
Tulane University of Louisiana School of Medicine (1929)		(1929)	Arizona
(1932) Maryland (1935) Mississippi (1930) 1931)			
Johns Hopkins University School of Medicine (1921)		(1921)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons (1934)		(1934)	Maryland
Harvard University Medical School (1934)		(1934)	Mass
University of Minnesota Medical School (1930)		(1936)	Minnesota
St. Louis University School of Medicine (1927)		(1927)	
(1933) (1934) (1936 2) Missouri			
Washington University School of Medicine (1933)		(1934)	Missouri
University of Nebraska College of Medicine (1927 2)		(1932)	Nebraska
New York Homeopathic Medical College and Flower Hospital (1934)		(1934)	New York
University of Buffalo School of Medicine (1929)		(1929)	New York
Western Reserve University School of Medicine (1936)		(1936)	Ohio
University of Oklahoma School of Medicine (1926)		(1931)	Oklahoma
Jefferson Medical College of Philadelphia (1933)		(1933)	N Carolina
Meharry Medical College (1929)		(1936)	Tennessee
University of Tennessee College of Medicine (1936 3)		(1936 3)	Tennessee
Vanderbilt University School of Medicine (1934)		(1934)	Tennessee
University of Virginia Department of Medicine (1933)		(1933)	Virginia
Murquette University School of Medicine (1913)		(1913)	Wisconsin
Queen's University Faculty of Medicine (1911)		(1911)	New York
Universität Basel Medizinische Fakultät (1915)		(1915)	New York
Osteopathic Iowa 4 Kansas 2 Missouri 24			New Mexico 1
Oklahoma 3			

* Verification of graduation in process

† Licensed to practice medicine and surgery

‡ Examined in medicine and surgery

Book Notices

The Mind of Man. The Story of Man's Conquest of Mental Illness. By Walter Bromberg M.D. Cloth Price \$3.50 Pp 323 with 19 illustrations New York & London Harper & Brothers 1937

This is a fascinating volume on the history of psychotherapeutics. If one remembers that this branch of medicine has been ignored by historians particularly in the United States the significance of the present volume cannot be overlooked. It is the first volume of its kind and it is carefully and interestingly written. The picture of the development of psychiatry from the earliest ages up to the present time is consistently and carefully enumerated. Space is given to the point of view of the ancients, and the development of thoughts about the treatment of mental disorder is carried fairly consistently through the Middle Ages, the witchcraft craze, and the earlier days of liberalizing the treatment of the insane by Pinel and others. The author does not hesitate to include as contributors in this field the works of such people as Mary Baker Eddy, Mesmer and others who have in the past been labeled as quacks but whose position in the development of treatment of mental disease is understood better in the light of a more modern perspective. Hypnotism and suggestive therapy are dealt with to a considerable extent. About a fourth of the book is devoted to the development of the psychoanalytic and allied theories. These are simply discussed with little embellishment and the facts are clear. A number of new techniques such as those of Schilder, Cowles, Wagner-Jauregg and Stackel are mentioned. The most serious criticism that one can lay against this work is that each contributor to the science of mental healing is dealt with in rather a summary fashion and in many cases the whole contributions of such major scholars as Kraepelin and Hoch have been dismissed with only a page or two. This is undoubtedly due to the fact that the author wishes to include almost all the major contributors to psychiatric treatment within the covers of this single none too large volume and at the same time wishes to keep his discussion simple. For this reason perhaps the foregoing criticism cannot be considered too important. All in all, Bromberg gives a simple easily readable

picture of the development of psychiatry from the healing standpoint rather than the diagnostic standpoint, through the ages and up to the present time. It does not, perhaps, give an adequate picture of what psychiatry is doing today in the way of the administration of the mental hospital, child guidance and mental hygiene, but it might at least serve as a stimulant for the reader who wishes to go further into the field. It has an excellent bibliography, and there are a number of pages of plates in the front of the volume dealing with various artists' conceptions of madness and witchcraft. Until a better book is produced, and it may be some time until such a volume appears, although it is said that several extensive, more scientific works are being prepared, the present monograph deserves a place on the shelf of each psychiatrist's library. It would do no harm for general practitioners or even the nonmedically trained who have some interest in the field of treatment of mental disorders to read it. Nobody can go through its pages without realizing what strides psychiatry has made in the treatment of mental disease and without being impressed by the careful and extensive work recorded.

Radiokymographie du cœur et des vaisseaux. Par Emile Bordet et H. Fischgold. Paper Price 30 francs Pp 134 with 66 illustrations. Paris Masson & Cie 1937

This is an excellent summary of the recently developed promising field of roentgenokymography. The development of the technic popularized in particular by Stumpf of Germany is just beginning to be applied in this country. As experience is gained and as the use of this technic is advanced, considerable information should be obtainable concerning the manner of beating of the human heart in health and disease. This technic may lead to an important method of objective diagnosis of heart disorders. For these reasons this monograph is particularly timely and deserves careful attention. The authors are cognizant of the literature, have summarized present knowledge in a clear fashion and have included original observations. They have attempted to correlate the data obtained with the physiology of the heart, and they have made some interesting observations concerning the physiology of the normal human heart which should point the way to future work along these lines. It is regrettable that the enthusiasm of the authors in this connection has permitted them to inject certain a priori conclusions yet to be demonstrated. They properly emphasize that the time curves of the movement of various points on the border of the heart are partly due to (a) general shifts in the position of the heart and to (b) movements in directions other than at right angles to the tangent of the border. Caution must therefore be used in the interpretation of these curves particularly as regards the physiology of the heart. The diagnostic value of the procedure in clinical disorders, however, being arrived at empirically on the basis of experience, is not affected by the manner in which the curves are derived. The publishers have bound some fifty pages of advertisements with the text. This practice should be discouraged. It is unfortunate also that the authors in correlating the roentgenokymographs with other graphic evidence of heart action have utilized records now generally discarded except for historical interest. Nevertheless the cardiologist, the roentgenologist and the internist will find this monograph worth while.

Guiding Your Life with Psychology as a Key. By Josephine A. Jackson M.D. Cloth Price \$2.50 Pp 352 New York & London D. Appleton Century Company Incorporated 1937

Probably every one knows Josephine Jackson's earlier 'Outwitting Our Nerves' which is rather superficial but seemed to be helpful to a certain number of people. The present volume is devoted particularly to a common sense series of recipes for guidance of self and others with whom one may come in contact. It traces the various problems that may arise from early childhood up to senescence and gives rules as to how they can be controlled. The standards of course are superficial and there is no pretense of deep therapy or any explanation of the mechanisms causing the problem. The atmosphere is not medical but is rather that of a motherly woman physician who wants to be as helpful as possible to those who come to her for advice. Most of the information given in the book is sound as far as it goes. Some chapters are actually in question and answer form like the advice to the loveless color is

in the newspapers. The child guidance program is simple and contains various types of advice which are tried and true and which can be applied by almost any mother. Probably the only danger of the volume would lie in the fact that its title might lead a maladjusted person to purchase it in order to straighten out his problems. If it is to be used as a guide for some one who merely wishes a little advisory literature to read but who is basically sound in his emotions, the book should prove to be helpful. It does not, however, and obviously no book can explain to the layman the basic causes of maladjustment and how to overcome them. Since there is no attempt to deal with other than the simplest problems, the book cannot be condemned. It is questionable whether the volume could serve any purpose for the practicing physician unless, perhaps, its chapters on child guidance, marriage guidance and suggestions for a comfortable old age might be referred to the patients who seem to be rather well adjusted but who ask for literature on these subjects.

Die Klimatische Behandlung der Tuberkulose und ihre heutige Bewertung Von Professor Dr med A. Bacmeister, Leitender Arzt des Sanatoriums für Lungenkranke in St. Blasien. Sonderdruck aus Brauers Beiträge zur Klinik der Tuberkulose. Band LXXXIX, Heft 3. Paper. Price 1.80 marks. Pp. 28. Berlin: Julius Springer, 1937.

This booklet on climatic therapy in tuberculosis apparently was written for home consumption—in both senses of the word. In places it is difficult to differentiate it from a eulogy on the third reich, as for example these therapeutic gems: 'Fortunately under the influence of the great revolutions in the spiritual, political and economic spheres which we have experienced the repressed and underestimated natural healing factors in the entire field of medicine are again in the foreground. Medical climatology must be scientifically investigated, as it is of greatest importance for racial health, foreign trade and the total national economy. In our German fatherland this has been recognized in authoritative circles. Here in Germany we have climatic health resorts for nearly every disease—which in no way are second to foreign places as to climate or equipment and in many ways surpass them. In this field is a profitable task within the framework of the new four year plan'. Significantly, most of the other resorts mentioned are Italian. If one survives the political economy (perhaps written reluctantly by a man of Bacmeister's scientific standing, if not actually under pressure) one finds that effective climatic treatment of tuberculosis involves recognition of the type of disease and the type of the resort. Exudative lesions do well in sedative climates. Fibrotic lesions improve in stimulating climates. Climatic factors include altitude, humidity, wind, temperature, sunlight, electrical charges and barometric pressure. To secure the proper proportions of these elements in the properly selected case, one is referred to lists admittedly compiled with the blatant cooperation of the German Council on Foreign Trade, the National Institute for German Baths, and the German Bath and Climatotherapeutic Association.

Studies in the Psychology of Art. Volume II. Edited by Norman C. Meier. University of Iowa Studies in Psychology, No. XIX. Edited by Christian A. Ruckmick. Psychological Monographs, Volume XLVIII, No. 1. Whole No. 213. Edited by John F. Dashiell and others. Paper. 1 p. 1.10 with illustrations. Princeton: C. Albany Psychological Review Company, 1936.

This volume contains eight reports of research done on the psychology of art. The first paper is a study of the art appreciation process at the child level, in which the writer concludes that there are certain techniques necessary to teach the principles of art to children as low as the second, third, fourth and fifth grades. The second paper studies emphatic responses in children and the writer finds that this type of response begins at an early age and may be found even in kindergarten children. Growth is a characteristic of this behavior and it is possible to devise a test which has the ability to discriminate certain relationships as to age and artistic ability. Briefly stated there are four tests to which the child has to give an adjectival response such as pleasantness, unpleasantness or an impression to a certain picture or diagram. The third paper is an extension of a well known art test the McDory down to earlier child levels and the writer demonstrates that the test is valid even as low as grades two and three. Another contribution contained in this volume is the discussion of measurement of

quality in children's paintings, in which a scale is devised that is found to be relatively reliable. A study is made of artistic ability and its relationship to general intelligence, and it was found that artistic ability is related to general intelligence, particularly if there is a higher than average degree of intelligence it is likely to be concurrent with artistic superiority. It was found so another study indicates, that artistic aptitude is not entirely stable, that those who do not have as much esthetic sensitivity as may seem necessary for them may be stimulated so that this sensitivity will increase with favorable physical conditions, such as esthetic surroundings, reasonable motivation and confidence. Norman Meier the editor of the monograph, contributes one study in which he shows that it is possible for a child without instruction to have sufficient inherent artistic ability so that his productions are higher than those which one would expect of those at his age level. Meier thinks that superior intelligence, coupled with fresh and vivid visual perception, acting with a sufficient constitutional inheritance, lies behind innate artistic ability. The last paper describes an instrument for the study of creative, artistic intelligence which is unique and very useful. The whole collection of papers is part of a comprehensive investigation being made at the University of Iowa. Artistic ability is one of the most difficult traits to diagnose and yet one of the most useful to have. Too many people go into artistic work who are not capable, merely because of some extraneous emotional factor. With the increase in knowledge on the matter of artistic ability, which should be sooner or later capably delineated by the Department of Psychology in the University of Iowa, one may find fewer misfits entering the field. Possibly new factors will be detected which can be used to increase the artistic satisfaction of the population as a whole.

Précis de physiothérapie clinique. Par le Docteur Paul Duhem, chef du service central de physiothérapie de l'Hôtel Dieu. Preface de M. le Professeur Harvier, professeur de thérapeutique à la Faculté de médecine de Paris. Cloth. Price 130 francs. Pp. 603 with 155 illustrations. Paris: Gauthier Villars, 1937.

The author of this volume is editor of a series of excellent monographs on the principles and technique of the various forms of physical therapy, including radiotherapy. Perhaps this accounts for the present volume being principally devoted to the clinical use of physical measures. The first part presents a concise but somewhat disproportionate description of the five principal procedures in physical therapy: electricity, radiation, water, motion and cold, for of 122 pages only four serve to describe the principles of hydrotherapy including that of cold applications, while the chapter on 'cold' consists of but two pages describing the action and technique of carbon dioxide snow. Four hundred and thirty pages present the clinical application of physical therapy under the chapter headings of disorders of the nervous system, diseases of nutrition, endocrine syndromes, gastro-intestinal, circulatory, respiratory and genito-urinary diseases and disorders of the bones and joints, the blood and hematopoietic organs and the skin. Emphasis is laid throughout on points of differential diagnosis. In his thirty-five years of active experience as head of one of the oldest physical therapeutic departments of Paris the author has paid special attention to nervous disorders and those of nutrition. The last chapter describes the accidents and dangers of electricity. The book is written in a pleasing and easy style and affords a valuable presentation of present day rationale and methods by one of the leading physical therapists of France.

High Blood Pressure. By I. Harris, M.D. In collaboration with C. N. Aldred, M.D., J. T. Ireland, B.Sc. and C. A. James, M.Sc. A.C. Leverhulme and Maurice Stern Research Fellows (From the Liverpool Heart Hospital). Cloth. Price \$3.75. 1 p. 132 with 22 illustrations. New York & London: Oxford University Press, 1937.

This small volume is essentially a report of clinical and laboratory researches carried out at the Liverpool Heart Hospital on the problem of the kidney in connection with hypertensive arterial disease. There is no general discussion of the many other aspects of this complex subject. Data from several cases are given in detail and a brief discussion of the results of these studies is followed by conveniently concise conclusions. It is the firm belief of these investigators that a low protein intake reduces the arterial tension largely because of

the lessened necessity for excreting and concentrating large amounts of urea. They state emphatically that "the kidney performs under high protein feeding many times more work than it does under low. Urea is the main factor in this increase." They further conclude that an inability of the kidneys to concentrate the urine adequately is a feature of fully established cases of hypertony, such functional impairment has long been recognized. Nowhere in the book could evidence be found as to the causal relationships of these phenomena, it is just as likely that the hypertensive disease causes the impairment of urea concentration by the kidney as vice versa. The volume should prove of value and interest to investigators and clinical research workers in the fields of hypertensive arterial disease, nephritis and protein metabolism. It presents views quite contrary to the generally accepted opinion in connection with the effects of protein feeding in cardiovascular-renal disease and thus is provocative of thought. It is clearly of little or no interest to the general clinician, for these views must be digested and confirmed before they can be accepted.

Studies on Human Intestinal Protozoa Especially with Regard to Their Demonstrability and the Connexion Between Their Distribution and Hygienic Conditions. By Ruth Svensson. Acta Medica Scandinavica Supplementum IXX. Paper. Pp 115 with 13 illustrations. Stockholm 1935.

This presents an excellent study of survey and diagnostic methods for all the protozoa found in the human intestinal tract. The scope of the study is described in the preface. The author aims "to determine the effectiveness of different examination methods and to find a system of presenting results which would make it possible to compare figures obtained in different surveys." Also she investigated "how certain living conditions among different groups of people influence the spread of intestinal infections in general, using the frequency of intestinal protozoa as an index." No study of pathogenicity or clinical features is attempted. The study is carefully limited to persons showing no evidence of intestinal disorder. This limitation may possibly invalidate the author's general conclusions. An excellent historical and biologic summary covers the entire group of intestinal protozoa. Some may question minor selections of technic, as, for instance, the routine use of magnesium sulfate to obtain loose stool specimens, but all must agree with her dictum that the iron-hematoxylin vital staining method is *par excellence* the best for identification and has the advantage of furnishing permanent preparations. Her judgment that this method is too time consuming for routine use or for large surveys ignores American work demonstrating its practicability in both instances. The author evaluates the merits of (1) examination of formed stools, (2) examination of loose stools and (3) cultivation, and excellently summarizes the advantages and especially the disadvantages of each. Her experience in Sweden confirms studies in the United States showing higher rural incidence and the close relation of protozoal incidence to personal hygiene and to environmental sanitary conditions. She perhaps has not given sufficient attention to American work in this field, in fact, out of 104 references only nineteen have to do with work in the United States. The book will find a necessary place in medical libraries and in the personal libraries of technicians, protozoologists and clinicians interested in this field.

Cancer Memorandum on Provision of Radio Therapeutic Departments in General Hospitals. By A. B. Smallman CBE DSO MD Ministry of Health Reports on Public Health and Medical Subjects No. 79. Paper. Price 9d. Pp 32 with 4 illustrations. London His Majesty's Stationery Office 1937.

The purpose of this report is, as the prefatory note by Sir Arthur MacNalty states, the consideration of the present facilities in England for the treatment of cancer and suggestions for adequate care of the cancer patient. The effective treatment of cancer demands cooperation in three highly specialized fields: surgery, radium and x-rays. The conclusion is reached that the radiotherapeutic department should be an integral part of the hospital rather than a specialized annex to it. For adequate treatment in the general hospital all three methods of therapy should be available as well as the necessary diagnostic procedures, including pathologic and x-ray diagnosis and adequate medical service. In small hospitals the provision of full radia-

tion facilities is not feasible economically because they do not run to capacity. For sound economic use of the radiotherapeutic equipment a 300 bed hospital is necessary. For such a hospital about 1 Gm of radium and two tubes for roentgen therapy operating at from 200 to 250 kilovolts, are considered adequate. Valuable appendices to the report include a design for a radiotherapeutic department and one for the conversion of an existing hospital ward into such a department. There is also an appendix giving the recommendations of the British X-ray and Radium Protection Committee and the regulations for the care and custody of radium by the National Radium Commis-

Studies in General Psychology Volume II. Edited by Christian A. Ruckmick. University of Iowa Studies in Psychology No. XX. Edited by Christian A. Ruckmick. Psychological Monographs Volume XLVIII No. 2. Whole No. 214. Edited by John F. Dashiell and others. Paper. 76 with illustrations. Princeton & Albany: Psychological Research Company 1936.

This volume is a collection of four short papers by members of the Psychology Department of the University of Iowa. Two of these papers are by D. Ulrich Greenwald. Greenwald studied the psychogalvanic responses, i.e., changes in the skin resistance, in a number of individuals. These psychogalvanic responses are now known as electrodermal responses. Greenwald showed his subjects a moving picture and at the same time studied the emotional reaction to it. From the curve which he obtained he devised a quotient to show the amount of affectivity as measured by his technic. The chief observations of importance were that there was greater variability among females than among males. His second paper deals with the responses of abnormal subjects. These were psychotic patients from the Iowa Psychopathic Hospital and his results here showed that the reaction, according to his method, of the psychotic patients was well within normal limits, that there was greater variation to erotic situations than to dangerous situations, and that there was no distinctive deviation between the various clinical types of mental disease. The third paper is by Mildred H. Rasmus, who uses this technic to see whether there was an exhaustion of affect. She repeated the moving picture and found that the response on the electrodermal t. was less the second time. The last paper, by Benjamin Schaefer, is slightly different. Schaefer took records of the electrodermal response, the stimulus being certain movements on the part of each individual. He found that movement responses could be differentiated from emotional responses by differences in the latent period and in the period of deflection. He found that in most individuals there was a lessening of resistance, and he also pointed out that various movements cannot be differentiated from one another by the type of curve. This type of basic research still holds promise as a technic for use in personality and emotional studies. Greenwald's work does not conclusively eliminate the methods used in diagnosis but implies more need for research.

The Essentials of Chemical Physiology for the Use of Students. By J. A. Halliburton M.D. J. A. Hewitt Ph.D. D.Sc. Senior Lecturer in Physiology University of London. King's College London and W. F. R. Mason Ph.D. D.Sc. Reader in Biochemistry University of London. King's College London. Thirteenth edition. Cloth. Price \$1. Pp 330 with 56 illustrations. New York Toronto and London: Longmans (Green) & Co. 1936.

This edition is the first since the death of Professor Halliburton and embodies certain departures from previous editions. The elementary treatment of organic chemistry has been largely deleted. There has not been as much amplification of the physiologic portion as would be desirable. The treatment of physiologic chemistry, as that term is usually understood is decidedly elementary for a medical student's textbook and the chemistry also sketchy and obviously written for beginning students. This hybrid treatment of physiology and physiologic chemistry has no adequate pedagogic justification at least as far as the American medical school is concerned. There is no real synthesis of chemistry and physiology, any more than is gained simply by binding in one cover texts on each. The lack of critical treatment from a physicochemical point of view is typified in the statement about acid secretion by the gastric glands in which it is suggested that free hydrochloric acid exists in the ovine cells and from there pass by free diffu-

the tenth normal concentration in gastric juice. Both the effect of high acidity in cells on their integrity and the difficulty of accounting for the movement of hydrochloric acid into the secretion escape any comment. It may be that the book serves a useful function for students in Great Britain, where physiological chemistry as a separate teaching branch is less thoroughly established than it is here. But as a textbook for American medical students it is hardly likely to be of great use.

Safeguarding Mental Health. By Raphael C. McCarthy, S.J., Ph.D., President of Marquette University. Cloth. Price \$2.50. Pp. 297. New York: Milwaukee & Chicago: Bruce Publishing Company, 1937.

This book, by the president of Marquette University, is announced as a key to self mastery and a successful life. The author undertakes to present for lay readers a conception of the nature of mental diseases, their determinants particularly as related to early training, the responsibility of home and of parents in provoking or minimizing adjustment difficulties in children, and the meaning of and need for mental hygiene. The author discusses in some detail parent-child relationships and teacher-pupil relationships. Such chapter headings as those on the danger of defense mechanism compensating for defeat, the bogey of fear and the fear of oneself indicate the nature of his approach to the problems of adjustment. It is intended to be a popular presentation but it is also superficial and at times not entirely authentic. It is, nevertheless, superior to many popular works in the field, because the author consistently maintains the point of view of good mental hygiene. The superficial nature of the presentation at times betrays the author into oversimplifications that constitute inaccuracies. The chapter on the danger of defense mechanisms, to choose an example, implies that healthy persons do not utilize "defense mechanisms" in a healthy manner. The definition or rather brief discussion of "introverts of whom we hear so much today" (p. 118) constitutes a misapprehension of the term introvert and of the individuals to whom it might be applied. The discussion under the paragraph on regressive maladjustments (pp. 151-152) again is so excessively simplified as to be misleading. Perhaps it is too much to demand scientific accuracy in as popular a book as this one but the deficiencies noted should be avoidable even in a popular book. One looks eagerly to the chapter on religion and mental health, since the author is in a particularly good position to present this important theme adequately. Here unfortunately he abandons his position as a psychologist and writes as a priest and thereby weakens rather than strengthens his chapter. A much stronger presentation of the mental hygiene value of religion and of religious institutions could be written, and without recourse to such statements as that in the discussion of confession "they are helped by the supernatural aid they receive in fulfilling their office" and the obviously unwarranted statement "the one effective motive that regulates unruly sex impulses is religion." A major defect is the complete omission of advice to parents on the sexual instruction of children. The book is full of sane and wise advice and suggestions which non-neurotic persons will be able to profit by. The point of view it represents warrants its recommendation to mentally healthy general readers, not as a scientifically accurate work on mental hygiene but as a sympathetic discussion of some problems of adjustment.

Anleitung zur Konstitutionsdiagnostik bei kindlicher Tuberkulose (an Hand von praktischen Beispielen). Von Professor Dr. Kurt Klare, Direktor der Tuberkulose-Kinderklinik, Prinzregent Luitpold, Scheidegg, München. Heft 17. Praktische Tuberkulose-Bücherei. Beihefte des Deutschen Tuberkulose-Blattes. Herausgegeben von Prof. Dr. Kurt Klare. Paper. Price 4.35 marks. Pp. 36 with 22 illustrations. Leipzig: Georg Thieme, 1937.

This monograph contains an introduction devoted to a general discussion of the subject, followed by a detailed description of sixteen cases. The illustrations are mostly reproductions from x-ray films. The author emphasizes the importance of differentiating between nonspecific symptoms among positive tuberculin reacting children with the exudative-lymphatic type of constitution and those which are actually due to tuberculosis. He is of the opinion that a high degree of sensitivity is beneficial to the child and warrants a better prognosis than a low degree of sensitivity. He also emphasizes the fact that children with

only the primary complex do not require institutional care. He does not stress the importance of epidemiologic work or the protection of infected children against reinfection with tubercle bacilli.

Maladie hypertensive et syndromes d'hypertension. Par A. Dumas, professeur agrégé à la Faculté de médecine de Lyon. Paper. Price 22 francs. Pp. 136. Paris: Masson & Cie, 1937.

This is the sixth of a series of small, paper bound monographs. Dumas has written voluminously on circulatory problems, this being the fourth of his monographs on related subjects. He discusses hypertension as a sequel to other disturbances and differentiates hypertensive secondary to renal disorders, uterine and gonadal changes (virilism) and so on. Much more prominent, clear and well written, however, is the discussion of chronic progressive hypertension or hypertensive disease. Here he follows the usual and conventional arrangement, considering in turn the definition of the disease entity, its etiology, symptomatology, complications and accidents, prognosis and treatment. The discussion of therapy is purely conventional and is so brief that it may be called sketchy. Acetylcholine and insulin free pancreatic extract are stressed. The book may be classed as a condensed "brush up" monograph on hypertensive arterial disease which presents the present day French point of view concisely. The bibliography is almost wholly European and largely refers to French literature. Nothing original or thought provoking is found and the book will excite little interest among specialists here. For students and nonspecialists the several excellent American monographs are more than adequate.

The Normal Encephalogram. By Leo M. Davidoff, M.D., Assistant Professor of Neurology in the College of Physicians and Surgeons, Columbia University, and Cornelius D. Dyke, M.D., Assistant Professor of Radiology in the College of Physicians and Surgeons, Columbia University. Cloth. Price \$3.50. Pp. 224 with 149 illustrations. Philadelphia: Lea & Febiger, 1937.

This excellent treatise on lumbar insufflation of air contains essentially the experience of the authors covering 4000 cases and a review of the literature. Their own material includes a description of the technic, indications and contraindications for the performance of the test, and the reaction of the patient during and after the procedure. The illustrations are printed clearly. The authors' technic as well as their descriptive text is simplicity in itself. Davidoff and Dyke follow the simple rule of using encephalography for all patients needing such a test who do not have clinical signs of increased intracranial pressure. This concept is entirely sound. Encephalography should be done by those having experience with the procedure as well as having the ability to interpret properly the films and a thorough knowledge of the anatomy of the brain and the physiology of the cerebrospinal fluid circulation. The bibliography is complete. This brilliant book should be in the hands of all neurologists, neurosurgeons, roentgenologists and physicians interested in air studies of the brain.

Culture des tissus et cancer. Par le Docteur Edward A. Stern de la Faculté de médecine de Paris. Paper. Pp. 136 with 20 illustrations. Paris: Vigot Frères, 1936.

This monograph is not intended to replace the standard textbooks, such as Fischer's, on the methods of the growth of malignant tissue in vitro. It is rather a general analysis of the subject, partly from the author's own investigations and partly from the published work of others. Unfortunately, the author does not explain why a colloidal solution of methylnanthrene will produce a high percentage of tumors in mice in the course of two or three months when injected subcutaneously and yet will not change a fibroblast growing in vitro in this suspension into a sarcoma. True des Ligneris claims to have observed this change in fowl tissue, but apparently no one has confirmed this statement and the difficulties of experimenting with a growth like the fowl tumor which is due to some type of virus, renders complete confirmation much more essential than if des Ligneris were working on mammalian tissues. Stern quotes with approval the definition of a cancer cell of which the latest exponent, though by no means the originator, is William H. Lewis, that the cancer cell is a diseased cell, that is altered in a permanent fashion so that it is really a new race of cells, and that this change is irreversible in the body and in vitro. Of course this

does not explain anything, it is only a statement of known facts. An excellent bibliography is appended and the volume offers a good survey of the present status of this most difficult and tedious method of biologic experimentation.

Die Praxis der physikalischen Therapie. Ein Lehrbuch für Ärzte und Studierende. Von Dr. A. Laqueur, Professor und Direktor der Abteilung für Physiotherapie im Staatl. Musterkrankenhaus Ankara und Dr. J. Kowarschik, Primararzt und Vorstand des Institutes für Physikalische Therapie im Krankenhaus der Stadt Wien. Fourth edition. Paper. Price 24 marks. Pp. 466 with 234 illustrations. Vienna: Julius Springer, 1937.

This volume is a combination of two earlier textbooks, Laqueur's of the same title, dealing mainly with hydrotherapy and thermotherapy, and Kowarschik's book on electrotherapy. Laqueur, who was for many years head of the physical therapy department at the Municipal Virchow Hospital in Berlin, is now director of that department in the model hospital in the capital of new Turkey. The first half of the volume deals with effects and technics with chapters on hydrotherapy, thermotherapy, balneotherapy (hydriatic applications combined with special chemical and physical stimuli), light therapy and heliotherapy, electrotherapy, massage and mechanotherapy. Special emphasis is placed on the underlying biophysical principles. In the opinion of the authors, short wave diathermy embodies no new principle of treatment and has no specific action. The assertion that short wave therapy would eliminate the necessity for surgery in purulent infections of the skin is not justified. The second half of the volume deals with the physical treatment of various diseases. In both parts the presentation is clear, concise and scholarly. There are numerous excellent diagrams and illustrations. This book represents the most competent and most practical present day German exposition of physical therapy.

Surgery for Dental Students. By Philip H. Mitchell, M.D., M.S., F.R.C.S., Hon. Surgeon to H. M. the King, Clement E. Shattock, M.D., M.S., F.R.C.S., Surgeon and Lecturer in Surgery, Royal Free Hospital, Edward C. Slesinger, O.B.E., M.S., B.Sc., Surgeon and Lecturer in Surgery, Guy's Hospital, and Cecil P. G. Wakeley, D.Sc., F.R.C.S., F.R.S.E., Senior Surgeon and Lecturer in Surgery, King's College Hospital. Cloth. Price \$4.75. Pp. 364 with 105 illustrations. Baltimore: William Wood & Company, 1936.

According to the preface, this book is intended to furnish in the most concise and clear manner the minimum that a dentist is expected to know of surgery and pathology to prepare him for the licentiate examinations in Great Britain. 'To the student it is offered as a textbook containing the knowledge he will be expected by his examiners to possess. Such subjects as general surgical pathology and infections and specific surgical infections, wounds, tumors, cysts, surgical conditions of blood vessels and of nerves, fractures, diseases of bone and of the temporomandibular joint and surgical conditions of the head and neck are discussed in the nineteen chapters. The book contains more pathology than surgery. The treatment is clear and concise, as the preface indicates, and considering the objective, quite satisfactory. From the standpoint of many educators, however, it does not represent what is expected of a dental graduate of the present day.

Veröffentlichungen aus der Konstitutions- und Wehrpathologie. Herausgegeben von L. Aschoff, W. Ceelen, W. Koch und P. Schürmann. Geleitet von W. Koch. Heft 39. Band IX. Heft 2. Morgagni's Syndrom. Hyperostosis frontalis interna. Virilismus. Obesitas. Von Folke Henschen, Professor der pathologischen Anatomie am Karolinschen Institut Stockholm. Paper. Price 6 marks. Pp. 82 with 15 illustrations. Jena: Gustav Fischer, 1937.

The author points out that frontal hyperostosis is accompanied by more or less constant symptoms. Adiposity is slow in developing and while finally most pronounced at the shoulders and hips the nuchal region and the abdomen occasionally also become involved. Polyphagia and polydipsia become troublesome manifestations. Muscular asthenia may or may not be some manifestations. The patient also has disturbed the cause of static disorders. The patient also has disturbed sleep, which may culminate in protracted insomnia and states of nocturnal agitation. There are also disorders in urination and often visual disturbances. The syndrome seems to be occasioned by disturbances in the infundibular and tuber cinereal regions, which in a few cases could be verified. The triad of symptoms characteristic of Morgagni's syndrome are (1) frontal

hyperostosis (main symptom), observed in 40 per cent of women during or following the menopause, (2) virilism, including masculine hirsutism and masculine features of the face and (3) adiposity. The syndrome is rarely seen in males. Endocrine disturbances may be the underlying causation and are often associated with senile atrophy of the brain and consequent dyspituitarism. The triad presents similarities to Pierre-Marie's, Cushing's and Frohlich's syndromes.

Funktionsprüfung der Atmung. Von Dr. A. J. Anthony, a. o. Professor, Oberarzt der Medizinschen und Nerven-Klinik Gießen (Prof. H. Feinwein). Paper. Price 15 marks. Pp. 226 with 34 illustrations. Leipzig: Johann Ambrosius Barth, 1937.

This is devoted entirely to the function of respiration. A general discussion of the physiology of respiration is presented in twelve pages. Numerous measurements of the thorax such as circumference, volume and diameters, have been studied as well as investigations with the X-rays. Considerable space is devoted to spirometer readings together with the determination of residual air, pneumothorax volume and alveolar air. Throughout the monograph, numerous illustrations are interspersed and detailed descriptions are given of various kinds of apparatus and their uses. The bibliography includes references to the work of many American authors. The volume contains a complete presentation of the subject and should be of value to all workers in this field.

Autonomic Neuro Effector Systems. By Walter B. Cannon, George H. H. H. Professor of Physiology, Harvard University and Arturo Rosenblueth, Assistant Professor of Physiology, Harvard University. Cloth. Price \$4. Pp. 229 with 42 illustrations. New York: Macmillan Company, 1937.

This monograph is timely in that it expounds in a lucid and interesting style the physiologic evidence and theory bearing on a new field of physiology which has been intensively cultivated during the last decade. This new field pertains to the concept that chemical mediators are concerned in the transmission of impulses from nerves to the muscular and glandular cells they innervate. The organization of functional activity of the autonomic system, as far as the evidence for the chemical mediation of autonomic impulses is concerned, is presented in a simple, concise and well organized manner. The essence of a large mass of literature, difficult for many to read intelligently, has been extracted and is presented so that the busy physician or student may in a few hours become familiar with this new and important subject. This field of physiology is too young to have produced numerous practical applications, yet acetylcholine, the parasympathomimetic mediator, is being used therapeutically. This monograph should be in the library of every physician who desires to keep abreast of his science and to comprehend the references to the chemical mediation of nerve impulses that are now appearing and that will appear more abundantly in the clinical literature.

Zehn Vorlesungen über Kymographie. Von Dr. med. Fleckhart Stumpf, a. o. Professor an der Universität München. Boards. Price \$10.00 mark. Pp. 112 with 80 illustrations. Leipzig: Georg Thieme, 1937.

This volume is a summary with supplementary material, of the author's "Roentgenkymographische Bewegungslehre innerer Organe" published in 1936 by Georg Thieme. Various points criticized in the earlier volume have been clarified and certain additional facts included with particular reference to aiding in the practical use of the methods discussed. The present volume is however chiefly a brief outline and introduction to the earlier work, so the amount of new material is not as great as might have been hoped for, and what is presented is not given much prominence. There is a short chapter on the general principles involved in the technic of the method, together with photographs of the apparatus. There follow nine chapters devoted to the technic and practical uses of the method for the study of the heart, respiratory movements, diseases of the thoracic cavity, movements of the stomach, duodenum and their contents, and the urinary tract. While this is not objectionable in general since the book is admittedly only an outline of the extensive book, the present volume would be much more valuable if the chapters on technic were more complete. In addition it enables the reader to study the many illustrations and check the author's diagnosis. Unfortunately, the book lacks an index.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Sponge Left in Abdomen—The plaintiff, as administrator of the estate of Rose Carauddo, sued the defendant, a physician, for malpractice. He alleged that the physician removed the deceased's gallbladder and left in her abdomen a gauze sponge, that four months thereafter another physician removed the sponge and that the patient died from peritoneal infection the day after the second operation. From a judgment in favor of the physician the administrator appealed to the district court of appeals, first district, division 2, California which affirmed the judgment. *41cs v Ryan* 47 P (2d) 771, THE JOURNAL Feb 1, 1936, p 411, 54 P (2d) 782. An appeal was then taken to the Supreme Court of California.

The evidence tended to show that neither the defendant the anesthetist, nor an intern who assisted in the operation kept any account of the number of sponges used. No safety appliances, such as metal rings or hemostats were attached to the sponges to minimize the possibility of loss. The defendant contended that it was proper practice for a surgeon to rely on the sponge count of the nurses working under him. But, said the Supreme Court, the reliability of the nurse's count, in order to justify a surgeon in safely acting on it assuming that in some unusual cases he may be justified in doing so, must be determined in each particular case on the basis of the qualifications and efficiency of the nurse and the care and attention which she has exhibited in the performance of her duties. If a surgeon elects to close up an abdominal incision relying solely on the count of the nurse, he must show that he was justified in doing so in the light of all the circumstances attending the operation. While the defendant testified that some one announced that the sponge count was correct there was no evidence that any one counted the sponges. The supervising nurse was present during only a part of the operation. The other nurse was attending an operation for the first time. Neither counted the number of sponges that was brought into the operating room the number that was used, or the sponges left unused after the operation. Proof of the closing of the incision with a sponge left in the abdomen called for an explanation by the defendant in the absence of which an inference arises that the defendant was negligent. The trial court in the opinion of the Supreme Court, should have instructed the jury in unqualified language that if the defendant closed the incision without first having removed the sponge a prima facie case was thereby made against him as a matter of law and that it devolved on him to rebut the inference of negligence by showing that he exercised the degree of care required of him in the circumstances of the case. The care required must be commensurate in all cases with the difficulties and inherent hazards attending the doing of the particular thing undertaken as it is ordinarily performed by other physicians in the same locality in like cases. The skill required to be exercised is presumed to be care of a high degree if the particular case in reason and practice, requires it.

The fact that the hospital did not furnish standard attachments or safety appliances for the sponges does not relieve the defendant from liability. The evidence showed that two other hospitals in the locality did use such safety appliances and the negligent practice of one hospital may not be accepted as a standard for the locality in which it is located. Furthermore there was no emergency in the instant case and the surgeon might have refused to operate until such time as the necessary apparatus had been obtained. He accepted the assignment to operate some time in advance and he knew every fact which might increase the hazards before undertaking the operation. This being so, the defendant assumed the risk of unwittingly overlooking sponges, which risk would in all probability have been eliminated if approved and reasonable precautions had been taken. The physician claimed that to have made a manual search on the completion of the operation for sponges that may

have been left in the operation wound would have subjected him to adverse criticism because such a procedure would be apt to spread the infection. It is difficult to understand the court said, how the possibility of spreading infection could outweigh the necessity of making certain that all foreign substances had been removed from the abdomen when error on the part of the operating physician would result in certain and inevitable injury to the patient. There was no evidence that the patient during the operation was failing or that the exploration was not made on any ground other than a mere possibility, matched against a certainty as to results.

The judgment in favor of the defendant was reversed and the case remanded to the trial court for a new trial.—*His v Ryan (Calif)* 64 P (2d) 409

Workmen's Compensation Acts Court May Not Order Employee to Submit to an Operation—The United States circuit court of appeals, fifth circuit, in a case arising under the workmen's compensation act of Texas, held that the United States district court for the western district of Texas did not have jurisdiction to require the claimant to submit to an operation to relieve a displaced semilunar cartilage. The workmen's compensation act authorizes the industrial board, not the courts, to enter such an order.—*Heard v Texas Compensation Ins Co* 87 F (2d) 30

Radio Electrical Transcriptions Produced in United States for Use on Foreign Broadcasts—Norman Baker and others were indicted April 20 1936, for violations of the Communications Act of 1934. The indictment charged that the defendants located, maintained and used "apparatus from which and whereby sound waves are and were converted into mechanical and physical reproductions of sound waves," and carried transported and delivered and caused to be transmitted and delivered such records or transcriptions to a radio broadcast station in a foreign country, to wit, Station XENT at Nuevo Laredo, Republic of Mexico, for the purpose of being broadcast from that station, which station had a power output of sufficient intensity and was so located geographically that its emissions could be and were received consistently in the United States, without first obtaining a permit from the Federal Communications Commission therefor, all in violation of the Communications Act of 1934. The defendant Norman Baker demurred to the indictment.

The power of Congress to regulate interstate and foreign commerce, including communications by wire and radio, need not be discussed, said the United States district court, S D Texas, Laredo division. Nor is it material whether such communication be wholly by wire or wholly by radio, or in part by both, or in part by some other means or method so long as it is in fact in interstate or foreign commerce. Baker contended, however, that the production of a record or transcription for transmission or delivery, and its transmission or delivery, was not a part of nor a step in either interstate or foreign commerce. With this contention, the court disagreed. The production of a record or transcription, the court said, is but the first step of a sender whose voice and words are recorded thereon, in sending a message in interstate or foreign commerce. The second step is the transmittal or delivery of such record or transcription to a radio station in a foreign country. This may be done by delivering the record or transcription itself to such broadcasting station or by playing the record or transcription and transmitting to such station by telephone or radio, the voice words or message recorded thereon. The third and final step is the radio broadcasting of the voice, words or message back into the United States. If the voice, words or message were transmitted directly by radio or directly by telephone from this country to such radio station in a foreign country the court continued and there broadcast back into this country little or no difficulty would be found in pronouncing it a message sent in interstate or foreign commerce, and within the power of Congress to regulate. Because a phonograph record or an electrical transcription is adopted as one of the steps in sending the message did not in the opinion of the court, change its character.

Believing that the provisions of the Communications Act of 1934 regulating the production of records or transcriptions to

be transmitted to a foreign country and broadcast into the United States were valid, and that the indictment was sufficient, the court overruled Baker's demurrer to the indictment—*United States v. Balcer et al*, 18 F. Supp. 48

Workmen's Compensation Acts Compensability of Silicosis—Where, as the result of an employer's negligence, an employee breathes quantities of granite dust over a period of time and in the course of his employment and the breathing of such dust causes silicosis, such disease, in the opinion of the Supreme Court of Georgia, is not a result of an injury or accident within the meaning of the Georgia workmen's compensation act and is not compensable thereunder—*Berkeley Granite Corporation v. Covington (Ga)*, 190 S. E. 8

Malpractice Duty to Disclose to Patient Unfortunate Results of Treatment—If a dentist fractures the jaw of a patient, said the supreme court of New York, appellate division, the law imposes on him a duty to disclose that fact to the patient so that he, the patient, may obtain treatment for the fracture—*Schoenbaum v. Alper (N. Y.)*, 293 N. Y. S. 817

Society Proceedings

COMING MEETINGS

American College of Surgeons Chicago Oct. 25-29 Dr. George W. Crile
40 East Erie Street Chicago Chairman, Board of Regents
American Society of Tropical Medicine New Orleans Nov. 30-Dec. 3
Dr. N. Paul Hudson Dept. of Bacteriology Ohio State Univ.,
Columbus Ohio Secretary
Association of American Medical Colleges San Francisco Oct. 24-26
Dr. Fred C. Zapffe 5 South Wabash Ave. Chicago Secretary
New York State Association of Public Health Laboratories Albany Oct. 29
Miss M. B. Kirkbride New Scotland Avenue Albany N. Y. Secretary
Society of Surgeons of New Jersey Trenton November 20 Dr. Walter
B. Mount 21 Plymouth Street Montclair Secretary
Southern Medical Association New Orleans Nov. 30-Dec. 3 Mr. C. P.
Loranz Empire Bldg. Birmingham Ala. Secretary
Southern Surgical Association Birmingham Ala. Dec. 7-9 Dr. Alton
Ochsner 1430 Tulane Ave. New Orleans Secretary
Western Surgical Association Indianapolis Dec. 3-4 Dr. Albert H.
Montgomery 122 South Michigan Blvd. Chicago Secretary

THE AMERICAN RHEUMATISM ASSOCIATION

Fourth Annual Meeting and Sixth Conference on Rheumatic Diseases
held in Atlantic City N. J. June 7, 1937

LORING T. SWAIM, M.D., Boston, Secretary

(Continued from page 1310)

Vitamin C in Rheumatic Fever and Rheumatoid Arthritis

DR. JAMES F. RINEHART, L. D. GREENBERG, PH.D.,
DR. FRANCES BAKER and F. CHOY, A.B., San Francisco

1. Rheumatic Fever—This study is based on determination of the fasting blood plasma levels of cevitamic acid in rheumatic fever and in other infections and pathologic states in children. Evidence is presented that the blood plasma level is an accurate index of the tissue saturation relative to vitamin C and that in normal persons it parallels the vitamin C intake. In acute rheumatic fever the cevitamic acid content of the blood plasma is found to be almost uniformly lowered. Although in most instances this state of vitamin C depletion probably resulted from inadequate intake, anorexia, digestive disorder and the intoxication of the disease itself are probably contributory factors. A low plasma vitamin C level in a single case is not evidence of scurvy. The latter results from operation of deficiency over a period of time. All evidence indicates that infection itself may deplete the organic store and increase the requirement for vitamin C. The plasma levels in rheumatic fever are, however, significantly lower than in a group of miscellaneous infections. In many rheumatic children although the disease process is clinically quiescent, low blood plasma levels are found. These data are considered

to add significant support to the concept that vitamin C deficiency may be an important factor in the etiology of rheumatic fever.

2. Rheumatoid Arthritis—This communication is a summary of a rather extensive study of the metabolism of vitamin C in health and disease, with particular reference to rheumatoid and other types of arthritis. It is based on determinations of blood plasma levels of the cevitamic acid. The data indicate that a high percentage of patients with rheumatoid and infectious arthritis show significantly low levels of vitamin C in the blood. An attempt is made to evaluate the degree of deficiency existing in these cases and to determine the basis for the development of this state. Cases of hypertrophic arthritis do not show evidence of such deficiency. Data are presented which indicate that some patients with rheumatoid arthritis have either a fault in absorption or utilization of this important food factor. The observations are considered as evidence strongly supporting the thesis previously presented that vitamin C deficiency may be a significant factor in the etiology of certain cases of rheumatoid and infectious arthritis.

DISCUSSION

DR. M. P. SCHULTZ, Washington, D. C. Since the brilliant observation of Dr. Rinehart and his colleagues that guinea pigs subject to the combined influence of chronic scurvy and infection with group C hemolytic streptococci develop a characteristic form of nonpurulent carditis, such experiments have been repeated by four groups of investigators. The observations of Dr. Rinehart have been confirmed in that cardiac damage of the type he originally described develops in guinea pigs subjected to chronic scurvy plus infection or, as appears to be indicated by recent work, uncomplicated acute scurvy. It should be pointed out, however, that none of these subsequent observers consider that these lesions bear a close resemblance to those of rheumatic fever. Warner, Winterton and Clark in a dietary study found that rheumatic children consume as much or more vitamin C containing foods as do controls. They state, indeed, that on the basis of their study the relationship between rheumatic fever and scurvy suggested by Dr. Rinehart cannot be supported. The experiments of Perry and his co-workers in which the degree of vitamin C saturation in rheumatic fever patients and controls was studied also did not support this hypothesis. Dr. Rinehart has described in part the experiments of this type which were undertaken at the Hospital of the Rockefeller Institute work with which I was associated. Because evidence of C hypovitaminosis was by no means found to be regularly associated with rheumatic fever, because similar degrees of deficiency were found to be present in other disease states, and because treatment with large doses of the vitamin were ineffective we concluded that scurvy was not an important factor in the pathogenesis of rheumatic fever. We considered those experiments in which individuals received 100 mg. of cevitamic acid daily in addition to their habitual diets (which in many instances did not seem to be inadequate) for several months before developing rheumatic fever in severe and typical form were of special significance. These patients received several times the quantity of the vitamin considered sufficient to prevent the development of scurvy, and when their degree of saturation with cevitamic acid was tested after the development of rheumatic fever no severe degree of hypovitaminosis C was found to be present. Investigators in this field are unanimous in the conclusion, so strikingly demonstrated by the extensive work of Dr. Rinehart, that some C hypovitaminosis does occur in patients with rheumatic fever. In the past few years about a dozen studies of C metabolism in various infections have been conducted. The degree of saturation with this vitamin has been investigated by measuring excretion after test dose or by estimating the level of blood cevitamic acid in many infectious tuberculosis, pneumonia, typhoid, furunculosis, etc. Studies of this character have demonstrated a tendency to C hypovitaminosis in all infectious states which have been investigated. Concerning the careful and extensive study which Dr. Rinehart has described only two questions occur. The first is regarding the method of titration used. The determination of reduced cevitamic acid by the method of Farmer—

Abt possesses certain advantages in that it is easily and rapidly performed and requires a minimum of chemical manipulation. The disadvantage lies in the fact that reduced cevitamic acid is readily converted to the reversibly oxidized form, a slight degree of hemolysis in the serum for instance accelerates this change and may be responsible for false low readings. As reported in the *Proceedings of the Society for Experimental Biology and Medicine*, Dr Piojan of Rochester, attempting to use the method as originally described by Farmer and Abt (presumably the unmodified method which Dr Rinehart employed), found it entirely unreliable. Further investigation demonstrated that false low readings were obtained unless the specimens were titrated immediately after the blood was drawn. Dr Piojan emphasized the fact that not longer than thirty minutes should elapse between drawing the blood and titration, if reliable data are to be obtained. In that Farmer and Abt did not mention the necessity of observing this precaution, and in view of the extremely low values which Dr Rinehart reports, the observations of Dr Piojan appear to be pertinent. I wish to inquire, therefore, whether in the experiments just reported all titrations were performed within the recommended time limit. The other question is with regard to medication received by the patients. Daniels and her colleagues have reported from Iowa that the administration of acetylsalicylic acid to febrile children results in increased excretion of vitamin C. These authors suggest that the unusually low figures which Dr Rinehart reports in children may be the result of depletion of C reserves by antecedent medication with acetylsalicylic acid. I am aware that Youmans and his colleagues have since reported that in the afebrile adults this effect of acetylsalicylic acid could not be demonstrated. Since rheumatic fever patients are chiefly febrile children, however, conclusions concerning C metabolism must be regarded with reservation if the subjects studied had received acetylsalicylic acid or salicylates. In view of the difficulty of finding arthritic patients, especially those with rheumatic fever, who have not been treated with these drugs, I wish to inquire whether Dr Rinehart eliminated this complicating factor in the present study. We are grateful to Dr Rinehart and his colleagues for this extensive study of vitamin C metabolism in infection. In the light of all information at present available on this subject however, it would be unjustifiable to conclude that the disturbances in rheumatic fever are of greater significance than those of similar character observed in other infections.

DR A. ALMON FLETCHER, Toronto, Ont. It is not easy to assess the significance of Dr Rinehart's observations. It is reasonable to propose that behind the development of rheumatic disease there is some chronic nutritional disorder. It is not likely that the answer to this important question is going to be found in the administration of a few tumblerfuls of orange juice or by the analysis of the patient's diet, because chronic nutritional disorders are likely to be to a large extent, irreversible or slowly modified by dietetic treatment. The production, in experimental animals, of lesions comparable to those of rheumatic fever and rheumatoid arthritis by vitamin C deficiency, is suggestive but does not by any means signify that these lesions are identical with those occurring in man. It is difficult to believe that many patients with rheumatoid arthritis are suffering from subclinical scurvy. Occasionally one observes the spongy, bleeding gums referred to by Dr Rinehart, which undergo prompt improvement with the administration of vitamin C. Much more frequently such changes are absent and, at times, patients with rheumatoid arthritis are made worse by the administration of large amounts of fruit. There is much clinical experience to suggest that patients with rheumatoid arthritis are helped by high vitamin diets and at times the liberal administration of vitamin C appears to be of value. Such measures would suggest that if chronic disturbed nutrition contributes to the development of this disease the disturbance is more of a nonspecific character in which vitamin C may at times be one factor.

DR JAMES M. FAULKNER, Boston. I find myself in such close agreement with Dr Schultz's remarks that I have little to add. The question seems to boil down to whether the low blood cevitamic acid values which Dr Rinehart finds in rheu-

matic fever are a cause or an effect. It has been recognized ever since the earliest published observations on scurvy, 350 years ago, that infection is an important predisposing cause of scurvy. Dr Rinehart has just demonstrated that the blood level of cevitamic acid is usually reduced not only in rheumatic fever but in other infectious diseases the etiology of which is well established. I have had the opportunity at the Boston City Hospital of estimating the blood values of cevitamic acid in patients with and without infection. All these patients had been on diets generally considered adequate in vitamin C content. In forty-three individuals without infection the average blood cevitamic acid value was 1.31 mg per hundred cubic centimeters, while in sixty-six patients suffering from miscellaneous infectious diseases the average value was 0.64 mg per hundred cubic centimeters. Among the patients with infection there were ten with acute rheumatic fever in whom the average value was 0.48 mg per hundred cubic centimeters. I did not regard the slight difference in average value between the rheumatic group and those with miscellaneous infections as significant. I also had the opportunity to study the vitamin C balance in a case of active pulmonary tuberculosis. The patient was maintained on a diet almost completely lacking in vitamin C and given measured amounts of pure cevitamic acid. It was found that it took 300 mg of cevitamic acid daily by mouth to bring the blood level and urinary excretion of this substance to normal values. Similar observations in a case of acute rheumatic fever revealed the same increased requirement, namely 300 mg a day. It seems to me that Dr Rinehart's observations might be explained on the basis of a nonspecific effect of infection on the metabolism of vitamin C analogous to the effect of infection on the metabolism of iron or of vitamin B. If vitamin C undernutrition were an important etiologic factor in rheumatic fever, one would expect to see rheumatic fever occasionally in the presence of clinical scurvy. I have not yet seen this combination.

DR RUSSELL L. CECIL, New York. Dr Rinehart was kind enough to send me some of his sections last winter. I was interested in some of the lesions produced in the guinea-pig. It seemed to me that, while there were some lesions that showed an infiltrative reaction, the infiltration was not as active as seen in typical rheumatic fever. I should think that controls with other vitamins would be important in this connection. The fact that the patient fails to improve when fed on vitamins is disappointing. The question after all is: Is this deficiency in vitamin C the cause or the effect of the disease?

DR JAMES F. RINEHART, San Francisco. Dr Schultz has raised a number of questions that are difficult to answer. The data presented here are not a final answer to the problem but I believe indicate an imperative need for adequately controlled prophylactic and therapeutic studies. The bulk of the evidence available at the present time indicates that the reduced form of cevitamic acid is the significant and physiologic active form of the vitamin. Dr Schultz has cited the excellent work of Warner, Winterton and Clark. This study is particularly painstaking but I do not believe that it is conclusive. A gross estimate of the intake of fruits and vegetables does not give an accurate idea of the vitamin C intake because of the varied content of this factor in different foods. With respect to the reliability of methods used I may say that we have investigated particularly carefully all possible pitfalls in the methods, and the evidence which I cannot go into at this time, indicates that they are entirely reliable. Data pertaining to the possible influence of acetylsalicylic acid on vitamin C excretion is controversial. As far as we know there is no effect of this drug on the blood levels; also many of our patients were not receiving any form of salicylates. I wish to thank Dr Fletcher for his conservative discussion of this paper and to reemphasize what has been said. Indeed the answer to the problem will not be found by giving a few glasses of orange juice to the patients. Dr Faulkner has raised a pertinent question: that is whether the low blood plasma levels of vitamin C are not secondary to the disease. This question perhaps applies particularly to acute rheumatic fever. There is every indication that infection itself serves at least in some degree to deplete the vitamin C reserves. We believe it to be particularly significant

that approximately 75 per cent of the chronic or inactive cases of rheumatic fever show significantly low plasma vitamin C. An inactive disease would hardly deplete vitamin C reserves. There is no reason to believe that the levels recorded do not represent habitual values for these patients. In rheumatoid arthritis, particularly, only occasionally have we seen severe infections preceding the onset of the disease and in the cases in which we have been able to demonstrate focal infections they have not been of a degree that might deplete the vitamin C reserve. Most of the cases in this study were in the outpatient department, ambulatory and except for the arthritic disability, showed no striking manifestations of infection. Low blood vitamin C levels are not only found in rheumatic fever and rheumatoid arthritis but they have been practically consistently found in these diseases. This consistency is significant. The question has been raised again why we do not see rheumatic fever in patients with scurvy. I do not believe that any one has sufficient data to answer this question. Obvious scurvy is a late and severe form of C deficiency. Clinically manifest scurvy is seen practically only in infancy and in adults. It is uncommon to see recognizable scurvy in individuals of the rheumatic fever age group. Is it not possible that this unrecognized scurvy is present in rheumatic fever or rheumatoid arthritis? If a disease resembling rheumatic fever or rheumatoid arthritis can be produced in animals by vitamin C deficiency (with infection for rheumatic fever picture) it is entirely reasonable that this deficiency would produce comparable states in human beings. Dr Cecil has asked why patients fail to improve on increased vitamin C intake. An adequate study of the effect of high intake of vitamin C in these diseases has not yet been made. In some cases the requirement is abnormally high. A high intake of vitamin C, controlled by chemical studies of the blood or urinary excretion, must be maintained over a long period of time and patients must be followed with care for adequate evaluation. Certain of the deformities produced will not be corrected by any method. I wish to express my thanks to those who have discussed these papers. In summary I may say that not only experimental but clinical, epidemiologic and biochemical studies all point to the possible importance of vitamin C deficiency in the etiology of rheumatic fever and rheumatoid arthritis. These data indicate clearly the importance of comprehensive preventive and therapeutic studies. The necessity of adequate control and long periods of observation must be emphasized.

Multiple Agglutinins in Serum of Patients with Chronic Rheumatoid Arthritis

DR CHARLES W. WAINWRIGHT, Baltimore. Nichols and Stansby first showed that the serum of patients with chronic rheumatoid arthritis possessed the ability to agglutinate so called typical strains of hemolytic streptococci isolated from the blood stream and joints of such patients. Later Olmstead and Dawson showed that this property was not confined to "typical strains" but was present for hemolytic streptococci derived from a variety of sources and for certain strains of pneumococci as well. They also were able to diminish markedly or remove entirely the agglutinins for other strains of hemolytic streptococci of the same serologic group by absorption with a given strain of hemolytic streptococcus.

McEwen, Chassiss and Alexander obtained cross agglutinations and cross precipitations with hemolytic streptococci of serologic groups other than the group containing those strains pathogenic for man. They concluded that these cross reactions were probably due to the presence of multiple antigens and the capacity of the individual to form multiple antibodies following infection. Dawson and Olmstead obtained similar results but to a much less degree and concluded that such cross reactions were due to common antigenic constituents in the various groups of hemolytic streptococci and that the agglutination reaction obtained with the serum of chronic rheumatoid arthritis was characteristic for strains of human origin.

We have selected the serums of twenty-five patients with chronic rheumatoid arthritis which agglutinated hemolytic streptococci of human origin beyond question and found that they regularly contained agglutinins for a strain of another serologic group seldom if ever producing disease in man. The

reactions were definite in all instances and in many only a little less in extent than for the strains of human origin. Agglutinins were also present for two other strains of the same heterologous group but less constantly and to a less extent. Ten serums from patients having no disease contained no agglutinins for any of the strains of hemolytic streptococci concerned in this study. The arthritic serums were then examined for agglutinins for alpha streptococci, type I pneumococci, type III pneumococci, the bacillus of dysentery (Flexner), *Bacillus proteus* and *Bacillus coli*. Only occasional reactions were obtained and when obtained the agglutination was present only in low titer, with the exception of type III pneumococcus. However, when a freshly isolated strain of the type III pneumococcus was used the reaction was not obtained and none of the serums gave the type specific precipitin reaction for the type III pneumococcus.

The arthritic serums were then absorbed with representative strains of the two serologic groups of hemolytic streptococci in question and with type III pneumococci. It was found that absorption with a representative strain of one group of hemolytic streptococci removed the agglutinins present for that strain and either definitely reduced or entirely removed agglutinins for the strains of the same group. However, agglutinins for the strains of the other group of hemolytic streptococci studied were not affected. When the serums were absorbed with type III pneumococci, any agglutinins present for the type III pneumococcus were removed, whereas agglutinins for strains of the two groups of hemolytic streptococci were uninfluenced or diminished in varying degree but were not removed. These results indicate that the presence of multiple agglutinins for hemolytic streptococci in the serums of patients with chronic rheumatoid arthritis is the most probable explanation of the phenomenon.

The Progression of Deformities

DR JOHN P. STUMP, New York. This tabulation of the common deformities demonstrates the complex progress of the formation of deformities. There is a primary distortion followed by additional deformities, which progress by rule and this is called "The Progression of Deformities." Thus is produced, by accumulation, a complex deformity.

The Common Deformities

Spine	Flexion with rotation
Shoulders	Adduction with internal rotation
Elbows	Flexion (30-40 degrees) with pronation
Wrists	Flexion with ulnar deviation
Fingers	Flexion <ul style="list-style-type: none"> (a) Ulnar deviation (b) Atypical extension
Hips	Flexion and adduction—precipitating <ul style="list-style-type: none"> (a) Equinus flexion of knee knock knee and flat foot (b) Tilting pelvis (c) Increased lumbar lordosis
Knees	Flexion <ul style="list-style-type: none"> (a) Precipitating equinus which encourages abduction and external rotation of hip followed by flat foot knock knee and finally tilting of pelvis to shortened side (b) Posterior dislocation of tibia
Feet	Equinovaginus <ul style="list-style-type: none"> (a) Midtarsal pronation (b) Depressed anterior arch (c) Hammer toes
Jaw	Closed

Many deformities are due to chronic arthritis, therefore, physicians treating arthritis meet the problem of deformities. There is a definite manner of progression from single, simple distortions of one joint to complex serious deformities involving multiple joints. If a patient with a simple distortion of one joint is not protected serious deformities of multiple joints will certainly follow. Familiarity with the nature of deformities and their progression will enable physicians to prevent disabling deformities in most of their patients suffering with chronic arthritis. The question of static strain predisposing normal joints to arthritis and the general subject of the prevention of deformities is suggested by this paper and will be considered in future presentations.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

54 459 698 (Sept) 1937

- Infection of Lower Part of Genital Tract in Girls J L Reichert I M Epstein Ruth Jung and Charlotte A Colwell Chicago—p 459
Sodium Mandelate as Urinary Antiseptic H F Dietrich Beverly Hills Calif—p 496
Prophylactic and Therapeutic Use of Scarlet Fever Convalescent Serum C M Hyland and Lucile Russell Anderson Los Angeles—p 504
Relation of Malocclusion to Sigmatisms I J Wolf Paterson N J—p 520
*Rickets Resistant to Vitamin D Therapy F Albright A M Butler and Esther Bloomberg Boston—p 529
Effect of Citrate and Tartrate on Experimental Rickets B Hamilton and Margaret M Dewar Chicago—p 548
Rectal Disorders in Childhood E A Daniels Montreal—p 573

Rickets Resistant to Vitamin D Therapy—In certain rare cases of rickets, in which the condition is frequently designated rachitis tarda or resistant rickets, more vitamin D than the amount ordinarily effective for the prevention and cure of rickets is required. During the last six years Albright and his associates encountered six such cases at the Children's Hospital. One patient, in whom rickets was particularly resistant to vitamin D therapy, who is now 16 years of age, has been observed for fourteen years. From the data submitted, it is clear that the failure of the patient to respond to vitamin D was due to an intrinsic resistance to the effectiveness of this agent. During the period of intravenous administration of crystalline vitamin D there was no doubt as to the absorption of large quantities of vitamin D, and yet no healing of the rickets occurred. The failure to respond to ultraviolet radiation also suggests an intrinsic resistance to the specific agent. On the other hand sufficiently large doses (from 150,000 to 1,500,000 U S P units) of the vitamin by mouth did produce healing. Therefore the intrinsic factor which prevented the usual response to vitamin D could be overcome when large enough amounts were given. This patient's condition, then is an example of a type of rickets of as yet unknown etiology which is not the result of a deficiency of the ordinary order of magnitude of vitamin D or ultraviolet radiation but which is due to an intrinsic resistance to the antirachitic action of vitamin D.

American Journal of Physiology, Baltimore

119 663 816 (Aug) 1937 Partial Index

- *Brain Potentials During Sleep H Blake and R W Gerard Chicago—p 692
Superfertility in Rats Treated with Mare Gonadotropic Hormone H H Cole Davis Calif—p 704
Removal of Intravenously Injected Bilirubin from Blood Stream in Dog C A Dragstedt and M A Mills Chicago—p 713
Nervous Control of Pancreatic Secretion in Dog Phoebe J Crittenden and A C Ivy Chicago—p 724
Influence of Dextrose Administration on Utilization of β Hydroxybutyric Acid by Normal and Eviscerated Rabbit I A Mirsky and R H Broh Kahn Cincinnati—p 734
Intermediary Calcium Complex in Blood Coagulation J H Ferguson University Ala—p 755
Mechanism of Lymphatic Absorption from Serous Cavities L Allen and Elkin Vogt Augusta Ga—p 776
Influence of Pancreas Extract (Fat Metabolizing Hormone) on Fat Deposition in Liver on a Low Protein Diet E M MacKay—p 783

Brain Potentials During Sleep—Blake and Gerard studied the brain potentials of young adults during normal night sleep, afternoon napping, postinsomnia sleep and, in one case, hypnosis. Depth of sleep was independently determined by the duration of a fixed sound required to awaken the subject (response to a question), by movement, respiration and the like and an orthodox sleep depth curve for the night so obtained. Potential patterns correlate with the depth of sleep not only over long time changes but, in most cases, rather accurately over

short time swings. Deep sleep is regularly associated with a large regular potential wave at a frequency of from one half to three a second, lighter sleep with feeble irregular potentials or with the ten a second rhythm. The results are interpreted in terms of excitation levels of cerebral neurons and of the play of nerve impulses on them. With low excitation a slow rhythm is manifest, with stronger excitation a faster one, and in transition between these states asynchrony prevents the manifestation of any regular beat.

American Journal of Surgery, New York

37 387 582 (Sept) 1937

- *Hyperthyroidism in Children Under Five Years of Age Report of Four Cases G Crile and G Crile Jr Cleveland—p 389
Subcutaneous Fixation with Screws for Fractures of Hip E O Geckeler Philadelphia—p 396
Status of Research on Injection Treatment of Hernia S W Fowler New York—p 403
Two Fatty Acid Solutions for Injection Treatment of Hernia H I Biegeleisen New York—p 413
Sciatic Scoliosis S Kleinberg New York—p 418
*Diverticulosis of Colon Its Incidence in 7000 Consecutive Autopsies with Reference to Its Complications E J Kocour Chicago—p 433
Cancer of Rectum and Colon G G Stebbins and M Burke Madison Wis—p 437
Treatment of Appendicitis D C Collins Los Angeles—p 440
Acute Appendicitis in Childhood Study of Cases Treated in Children's Ward of the Duke Hospital During the Period 1930-1935 Inclusive R Jones Jr and E E Meneffe Durham N C—p 446
Bursitis L Kaplan and L K Ferguson Philadelphia—p 455
Genoscolopamine in Obstetrics C D Bohrer New York—p 466
Changes in Infra Red Photographs Taken During Treatment of Varicose Veins E E Wilson Oak Park Ill—p 470
Infra Red Photography in Diagnosis of Vascular Tumors F Ronchese Providence R I—p 475
Thyroid Disease in the Smaller Hospital J W White Scranton Pa—p 478
Infections of Urinary Tract Modern Methods of Treatment S R Woodruff Jersey City N J—p 484

Hyperthyroidism in Children—In a series of 26,682 cases of thyroid disease which have been seen at the Cleveland Clinic, four cases of exophthalmic goiter occurred in children less than 5 years of age. The Criles believe that as a rule the hyperthyroidism of children is typical exophthalmic goiter in which all the classic signs are present. Enlargement of the thyroid and exophthalmos are quite constantly observed and the diagnosis can usually be made at a glance. It is apparent that exophthalmos is much more common in the hyperthyroidism of children than in that of adults. For this reason, the eyes should be one of the chief concerns in the management of the child with hyperthyroidism. In all four cases reported, exophthalmos was present and in the second case severe exophthalmos developed during the time the child was under treatment. It is extremely important to make accurate measurements of the position of the eyes if conservative management of hyperthyroidism in a child is to be tried. At the first definite indication of the development of progressive exophthalmos, subtotal thyroidectomy should be performed. In mild or early cases when the patient can be kept under close observation, conservative measures can be given a trial safely. If conservative therapy is selected, focal infection should be eliminated, bed rest prescribed and small doses of iodine and bromides given. But there seems to be no reason for prolonged delay of an operation which in all probability will eventually be necessary. If the patient is adequately prepared for operation and if the postoperative course is carefully managed, there is no reason why thyroidectomy should entail any greater risk in children than in adults. The three most common causes of death following operations for hyperthyroidism are pneumonia, cardiac failure and thyroid crisis. In children there is little danger of postoperative pneumonia, the myocardium is not affected as is so frequently the case in elderly patients and auricular fibrillation and cardiac failure are rare complications. No fatalities have occurred in the last forty thyroidectomies which have been performed for hyperthyroidism in children less than 14 years of age.

Incidence of Diverticulosis of Colon—In order to obtain additional information about the frequency of diverticulosis according to age, sex and race and about some of the most frequently associated pathologic processes, Kocour has collected the data from 7,000 necropsies which were performed at the Cook County Hospital between Jan 1, 1929 and Feb 23, 1935. There were 127 cases, or 1.81 per cent of diverticulosis. In

six cases the cause of death could be attributed to one of the complications of diverticulosis. One hundred and twenty of the patients were 41 years of age or more. Of the 120 cases 115 were uncomplicated. After 40 years of age the incidence of diverticula increases gradually in number and after 60 years of age the increase becomes very pronounced. Diverticula may be found throughout the entire colon, usually with increasing frequency from right to left. Fifty-four, or 42.5 per cent, of the total number of cases showed diverticula confined to the sigmoid colon, while in thirty-nine cases diverticula were found in the sigmoid colon and other parts of the large intestine, making a total of ninety-three cases, or 73 per cent, in the sigmoid colon or sigmoid and elsewhere. In twenty-two cases the entire colon was the site of diverticula, and fifty-two, or 41 per cent, of the cases showed diverticula in the descending colon or the descending colon and elsewhere. The diverticula in the other cases were confined to the cecum, the ascending colon, the transverse colon and the rectum or combinations of each other. There was only one case of carcinoma, it was located in the rectum and was associated with rectal diverticula. Of the 7,000 necropsies, 3,350 were of patients more than 40 years of age and of these 501, or 15 per cent, had lesions of the gallbladder. The percentage of lesions of the gallbladder associated with diverticulosis is twice that of the percentage of lesions of the gallbladder in the 3,350 cases. There were 243 cases of peptic ulcer in patients of 41 years of age or more. In the 120 cases of diverticulosis and diverticulitis there were eleven cases of peptic ulcer. Essential hypertension was present in 1,144, of which fifty-two, or 43.33 per cent, of the total number of cases of diverticulosis were associated with diverticulosis. Of the 127 cases, eight showed diverticula in the small intestine, twenty-seven showed polyps elsewhere in the gastrointestinal tract, eighteen showed carcinoma, and one sarcoma situated other than in the region of the diverticula was found.

American Review of Tuberculosis, New York

36 293 436 (Sept.) 1937

- Allergic State and Its Relation to Hypersensitiveness and Resistance J Brontenbrenner St. Louis—p 293
 Relation Between Tuberculin Allergy and Clinical Course J M Appel B H Douglas T R Jocz and H S Willis Northville Mich—p 303
 Application of Newer Purified Tuberculin Products by Pirquet Method A H Steele and H S Willis Northville Mich—p 309
 Diagnostic Application of High Doses of Tuberculin M Paretzky Los Angeles—p 313
 *New Administrative Technic in Tuberculosis Case Finding B H Douglas and H F Vaughan Detroit—p 325
 *Tuberculosis in Contacts of Children Who React to Tuberculin C W Wells Kingston Jamaica—p 332
 Factors Influencing Course of Tuberculous Infection in Young Children Miriam Brailey Baltimore—p 347
 Latent or Smoldering Stages in Tuberculosis J A Myers Minneapolis—p 355
 Multiple Calcifications in the Spleen Report of Case L J Moorman Oklahoma City—p 376
 Evaluation of Artificial Hyperpyrexia in Tuberculosis G R Duncan and E S Mariette Oak Terrace Minn—p 387
 Mediastinal Hernia Following Massive Atelectasis Report of Case in Tuberculosis Patient L Elicke Denver—p 398
 Reinduction of Pneumothorax A Shamasian and J Rogoff Bedford Hills, N Y—p 403
 Artificial Pneumothorax Reestablished After Phrenico-Exeresis W C Voorsanger San Francisco—p 421
 Trauma as Factor in Pott's Disease M H Skolnick Detroit—p 429

Tuberculosis Case Finding—Since such a large number of tuberculous cases are first seen by private physicians Douglas and Vaughan believe that the private physician is the most important factor in the search for patients with tuberculosis. In order to bring this about a campaign of education was launched in Detroit, designed to enlist financial support from the community through public funds, to arouse the public to the necessity of seeking careful examination to make certain that they individually do not have tuberculosis and to educate the medical profession in the steps of the campaign. The newspaper, the radio, talks before special groups and house to house visits by nurses were used to enlist the public in the campaign. The physicians were encouraged to undertake the work by material sent them by mail, by postgraduate courses and by visits from the medical coordinator to individual physicians and to small groups of physicians. The keen interest of the physicians is shown by the fact that more than 800 have signed up as cooperating physicians. Certain groups were selected for tuber-

culin testing contacts to known cases, persons whom the physician suspects of having tuberculosis in the course of examination for other conditions and those persons who live in areas in which the mortality from tuberculosis is exceptionally high. The method of examination used is that of tuberculin testing all children and adults in these three groups and making a roentgenogram of the positive reactors. Old tuberculin is furnished to the physicians in capillary tubes suitable for a Pirquet test. The private physician makes and reads the test and reports the result to the health department. If the test is positive he will then refer the patient to a cooperating roentgenologist for an x-ray examination with an interpretation based on a single flat film of the chest. This the roentgenologist reports to the original physician and also notifies the health department, indicating the result. All doubtful or positive films are reviewed by a special committee of roentgenologists. After the roentgenogram has been interpreted, the original physician sees the patient for the purpose of observing him more closely, acquainting him with the result of the examination and, if any disease is found, advising him as to hospitalization or other suitable care. Payment for this service is made to the physician on a fee basis. In order to encourage persons to go for these examinations, additional nursing personnel has been placed in the field to urge contacts to known cases of tuberculosis to go to their physicians, and in the areas of high mortality house to house visits are made to urge all persons living in such areas to be examined. A careful follow-up system is the responsibility of the nurses whose duty it is to visit periodically all contacts and to encourage them to be reexamined at regular intervals. Up to the present, 302 of the 850 cooperating physicians have turned in reports of 33,367 tests done. Of this number 7,412 or 22.4 per cent, are reported as positive. This percentage covers children and adults. Individual records are kept for each physician reporting so that, when there is an unusually low or high percentage coming in, his record is more carefully studied and if necessary a conference on technic is arranged. With a few exceptions the testing is being well done. Of the positive reactors, roentgenograms were taken of 5,122 and after careful recheck and elimination of inactive and negative cases originally reported as positive and active there were thirty-five patients with the active childhood type of tuberculosis, 163 with the adult pulmonary type and seventeen with other forms of active tuberculosis.

Tuberculosis in Contacts of Children Who React to Tuberculin—Wells analyzes the data, from the standpoint of the preschool and school child, derived from a tuberculosis survey in Kingston, Jamaica, concluded in February 1934. Of a total population of 7,093, 78.3 per cent were tested with tuberculin and 70 per cent received x-ray examinations of the chest. Seventy-two cases of manifest pulmonary tuberculosis, only eighteen of which were previously known were found among those examined. The conditions discussed by him are tuberculosis in household contacts of children who react to tuberculin, tuberculosis in yard contacts of children who react to tuberculin and an estimate of the total number of individuals it would be necessary to examine in order to discover cases of tuberculosis if certain principles were applied as a case finding procedure. For the purpose of the study, preschool and school children have been chosen as groups of individuals which might serve through their tuberculin reactions as indicators or reflectors of the location of tuberculous infection in the community. Home visits to reach preschool children are not impracticable and might even be desirable, since they would offer an opportunity for valuable educational efforts. Only thirty-two of the seventy-two cases of manifest disease found in the original survey were in household contact with children. The remaining forty cases comprised eight persons living alone and thirty-two who were living with one or more than one adult. None of these forty cases which were discovered because of a house to house survey could have been discovered through an investigation employing children as a starting point. In the survey population employed for the study, 23.2 per cent of the households contained preschool children. A certain number of persons with manifest tuberculosis may be in household contact with children who give a negative reaction to tuberculin. The search for cases of manifest pulmonary tuberculosis among the household contacts of tuberculin-positive children as determined from an analysis

of the survey data, would have resulted in the finding of twenty-one cases out of a maximal total of twenty-five cases, a percentage of 84. This number would have been only 29.2 per cent of all the cases found in the original survey, and 65.6 per cent of cases in household contact with children. The examinations comprised tuberculin tests and x-ray examinations, the latter being confined to children positive to 0.01 and 1 mg of tuberculin and contacts positive to 0.01 mg of tuberculin. A total of 3,110 tuberculin tests were given, averaging 148 tests for each new case of manifest disease discovered, 2,086 individuals, including children as well as contacts, were tuberculin positive and if these had been given x-ray examinations it would have meant roentgenographing an average of 99.3 individuals for every new case discovered. The analysis also shows that x-ray examination of persons living in yard contact with children who react to tuberculin would have revealed 68 per cent of the manifest cases found during a house to house survey, and 75.4 per cent of the cases among persons living in yard contact with children.

Annals of Surgery, Philadelphia

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- Regeneration of Bone Transplants H May Philadelphia—p 441
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- Intratracheal Thyroid Occurring in a Seven Months Human Fetus J Krafka Jr Augusta Ga—p 457
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- Modification of Tate Mason Method of Cholecystogastrostomy or Cholecystoduodenostomy R B Bettman and W J Tannenbaum Chicago—p 465
- Rupture of Liver Without Tear of Capsule D E Robertson Toronto—p 467
- Calcified Cyst of Spleen H K Shawan Detroit—p 469
- Cyst of Uterus M K Smith New York—p 474
- Method of Dealing with Profusely Draining Abdominal Wounds J B Lounsbury Ann Arbor Mich—p 477

Infections of the Hand from Human Bites—During 1935 Maier observed seventeen cases of infection of the hand due to human bites in the Fourth Surgical Service of the Bellevue Hospital. In most instances the injury was sustained in a fist fight and a laceration was produced over one of the knuckles of the hand. Four cases were in nurses who had been bitten by psychopathic patients and three were in police officers who received their injuries while trying to subdue a prisoner. Any local treatment applied to the laceration has no effect on the injured tendon, as the injured portion slides back when the fist is relaxed. The cutaneous injury may be treated effectively by various agents but the injury to the tendon is well concealed and these agents are ineffectual. This accounts for many of the disastrous results encountered in these infections. Any treatment, therefore, to be effective, must take into account the possibility of this retraction of the tendon. The treatment that the author has found most effective in this type of injury is as follows: A thorough debridement of the injured area is performed, with use of an Esmarch bandage. A careful examination of the underlying tendon is made for any evidence of injury or infection. All tissue suggestive of infection is removed. If there is any evidence of extension into the palm, this should be opened widely. Arsphenamine is then applied to the wound which is then packed with either plain or iodoform gauze.

Arsphenamine is applied daily for two or three days. At each dressing, the wound is thoroughly irrigated with hydrogen peroxide. The dressing is kept wet with either a boric acid or a magnesium sulfate solution. If conservative treatment is decided on, the patient should be watched carefully for the first twenty-four hours, for, if infection is going to spread, it will occur within the first twenty-four hours, and that is the time to institute radical treatment.

Arkansas Medical Society Journal, Fort Smith

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- Id II Reciprocal Relation of Area and Light Intensity and Its Significance for Localization of Tumors of the Brain by Functional Visual Tests C A Elsberg and H Spotnitz New York—p 243
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- Calcified Subpial Lesion of Spinal Cord with Associated Varicose Veins Case Report C C Hare and W H Everts New York—p 295
- Meningioma Report of Unusual Case L M Davidoff New York—p 300
- *Granulomatous Encephalomyelitis Due to an Encephalitozoon (Encephalitozoon Encephalomyelitis) New Protozoan Disease of Man A Wolf and D Cowen New York—p 306
- Manual Reflex Ulnar Adductor Reflex J L Pool New York—p 372
- Sensation of Electric Shock in Multiple Sclerosis L A Salmon New York—p 378
- *Effect of Heat and of Cold on Certain Symptoms of Multiple Sclerosis Note D J Simons, New York—p 385

Granulomatous Encephalomyelitis Due to an Encephalitozoon—The disease described by Wolf and Cowen is one in which the congenital nature of the encephalitis is strongly supported by the clinical and pathologic evidence, and in which the etiologic agent is apparently a parasite found in the affected tissues. After they completed the study of the pathology of such a case and the associated parasite, two incompletely described instances (one by Janku and one by Torres) of the disease were found in the literature. The occurrence of a spontaneous parasitic encephalitis in rabbits and mice is of interest in relation to this new human disease, because of the resemblance of the organisms involved and certain similarities in the pathology. The case reported occurred in an infant, born in New York City of American parents and dying at 4 weeks of age who had widely disseminated inflammatory lesions of the brain and spinal cord, consisting of granulomas, massive areas of infiltration and necrosis chiefly in the ventricular walls, and corresponding focal, meningeal inflammation. Similar lesions were present in the retina and choroid of both eyes. An organism, about 15 by 3 microns in size, usually ovoid and having a polar chromatin mass, was present in the lesions. It was most frequent where the process was most severe. There is a striking resemblance between the granulomas in this case and those seen in spontaneous encephalitis of rabbits and mice caused by *Encephalitozoon cuniculi*. The organism in the present case closely resembles this parasite of rabbit encephalitis and must be nearly related to it. There is evidence that the infection was congenital. It probably existed as a latent infection in the mother, passing to the more susceptible fetus by way of the placenta. It is proposed that the disease be called granulomatous encephalomyelitis due to an *Encephalitozoon* or *encephalitozoic encephalomyelitis*, and the organism *Encephalitozoon hominis*.

Effect of Heat and of Cold in Multiple Sclerosis—Simons inquired into the effects of heat and of cold on the muscle strength, spasticity, numbness and bladder symptoms in twenty-one patients suffering from multiple sclerosis. Heat had a bad effect on the strength of 62 per cent of the patients. Efforts to learn whether the responsible factor is heat or ultraviolet radiation have not been satisfactory. Those patients who have had heat therapy have almost all noted at once marked weakness. Nineteen per cent had not complained of weakness, but became weak under the influence of heat. Of three who had extensive trials of ultraviolet therapy, two noted no effect and one felt worse. Several patients have had treatment with effective forms of vitamin D therapy without noticeable effects on their symptoms. This suggests that it is not the ultraviolet of sunlight but the heat itself which causes the distressing weakness. Fifteen per cent of the patients felt stronger under the influence of heat. Of thirteen patients complaining of spasticity, 24 per cent felt that heat increased their stiffness, but spasticity was not induced by heat in any patient who did not already complain of it. Two patients believed that stiffness was lessened by heat. The remainder of the twenty-one patients were unaffected by heat so far as spasticity was concerned. Hesitancy, urgency or incontinence was present in fifteen of the cases studied. Cold had no effect on the strength of 48 per cent of the series, 38 per cent were improved and 14 per cent were made worse by cold. Spasticity was unaffected by cold in 48 per cent and was made worse in only 24 per cent. The majority of patients noted no change in numbness during cold weather. The sphincters were not affected by cold in 57 per cent, and 29 per cent noted improved sphincter control. In general, cold has no specific deleterious effect on any one symptom.

Colorado Medicine, Denver

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Indiana State Medical Assn. Journal, Indianapolis

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2. Syphilis Control Among Food Handlers of South Bend F. R. N. Carter South Bend—p. 420
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*Urinary Tract Symptoms as They Influence Differential Diagnosis of Diseases of Abdominal Organs H. O. Mertz Indianapolis—p. 435
Treatment of Bronchiectasis: Case Report of Two Stage Lobectomy P. D. Crumm, J. W. Strayer and C. S. Baker Evansville—p. 439

Symptoms of the Urinary Tract and Diseases of Abdominal Organs—Mertz contends that the principal indications for a urologic examination in the differential diagnosis of abdominal disease are unexplained abdominal pain, digestive symptoms of obscure origin and abdominal tumor. Hematuria and pyuria are cardinal manifestations of disease of the urinary tract, and their presence must never be ignored. Pathologic changes of the urinary tract may be present and be responsible for symptoms referred to areas remote from the kidney, and the urine may still be free of blood and be sterile. Likewise, under similar circumstances the preliminary x-ray examination may be negative. Pain caused by disease of the urinary organs varies in wide limits in its presence and in its location. It may be referred to the anterior part of the abdomen and resemble that caused by a disease of an intraperitoneal viscus. Pain is always emphasized in the recital of a clinical history and it may be given such prominence by the patient as to confuse the uninformed physician in its interpretation. Chronic digestive

symptoms may be due to chronic disease of the kidney. The differential diagnosis of an abdominal tumorous mass is always difficult. Palpatory observations alone are insufficient. Special methods of examination will frequently be required and the urologist should be consulted.

Journal of Biological Chemistry, Baltimore

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New Feeding for Premature Infants—Stoesser and Johnson used a preparation consisting of 40.6 per cent of skimmed cow's milk solids, 10.1 per cent of calcium caseinate, 17.5 per cent of olive oil, 31.7 per cent of a preparation of maltose and dextrin and 1 per cent of halibut liver oil in the treatment of eighty premature babies. Fifty-one premature infants were fed a breast milk formula and seventy-one were given an evaporated milk mixture and served as controls. A simple study of the results revealed that the skimmed milk-olive oil formula was easily assimilated by the infants with a birth weight less than 2,000 Gm., and in this respect it equaled the breast milk formula and surpassed the evaporated milk mixture. The larger infants with a birth weight of more than 2,000 Gm. who received the new preparation made a better showing than the other two units of the larger weight group which were fed the breast milk and the evaporated milk. The preparation may prove to be a valuable addition to premature infant feeding and at the same time lend itself to further modification. Further studies are indicated.

Laryngoscope, St Louis

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Minnesota Medicine, St Paul

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*Congenital Hypertrophic Pyloric Stenosis O W Rowe Duluth—p 508
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Indications for Newer Anesthetics J S Lundy and E B Tuohy Rochester—p 517
Cosmetic Dermatitis F W Lynch St Paul—p 519
Trend of Maternal Mortality in Minnesota R D Mussey Rochester—p 524

Congenital Hypertrophic Pyloric Stenosis—Rowe points out that the first symptom of congenital hypertrophic pyloric stenosis is vomiting, which usually appears about the second week but rarely may be delayed until after the fourth week. Accompanying this is a loss in weight and a decrease in the size of the stool and in the amount of urine. If vomiting persists, is frequently projectile in type and is free from bile and occasionally exceeds the volume of food taken at the last feeding, a search should be made for further evidence of obstruction. Visible gastric hyperperistalsis usually appears a few days after the beginning of the vomiting. The tumor may not always be found in the first days following the initial vomiting. Later it can be palpated at each examination. It is usually located rather deep in the abdomen near the right nipple line slightly above the level of the umbilicus. The condition of the child and the severity of the symptoms determine the immediate treatment. At one extreme is the young infant with vomiting of only a few days, with little loss in weight, slight dehydration and little disturbance in mineral balance. In such cases fluid parenterally, either physiologic solution of sodium chloride or possibly dextrose solution, will so improve the condition that conservative treatment can be safely attempted, or, if surgery is elected, further preoperative preparation is unnecessary. At the other extreme is the unfortunate infant of 3 or 4 months who can be classified as in an advanced stage of marasmus or atrophy. In some of these babies marked dehydration and alkalosis are potent factors in determining the outcome. The procession of events in such cases is so rapid that therapy may

have to be controlled entirely by clinical observation rather than by time consuming laboratory procedures. The first treatment is directed toward the immediate relief of the symptoms of tetany. This is followed by attempts to restore normal bicarbonate and pH contents of the body fluids together with the restoration of the electrolyte balance. Convulsions are treated with inhalations of oxygen and carbon dioxide in the proportions of two to one. Chloral hydrate by rectum is valuable. Calcium chloride is given intravenously, usually in 5 per cent solution, the dose being 0.25 cc per kilogram of body weight. Calcium gluconate may be used at this time or later. Further dilution of the blood and reduction in the bicarbonate concentration may be accomplished indirectly as a result of selective renal activity following the administration of physiologic solution of sodium chloride or Ringer's solution. After the immediate emergency is controlled, a slow response may make transfusions advisable. The measures employed in the nonoperative treatment must first maintain absolute control of the infant's chemical and physical processes. In every case the operation has been a Fredet-Ramstedt submucous pyloroplasty. The technical difficulties are few and in experienced hands easily handled. The surgical mortality would seem to depend on the surgeon's recognition of the differences of technic in infants and adults. The postoperative treatment again depends on the condition of the child. The prognosis in congenital pyloric stenosis, if recognized early, is very good. In babies with pronounced changes in their physical and chemical processes success will depend largely on the preoperative treatment. Surgical procedures cannot be expected to correct irreparable changes in metabolism.

Missouri State Medical Assn Journal, St Louis

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New England Journal of Medicine, Boston

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*Insulin Shock Treatment of Schizophrenia F Lemere Seattle Wash—p 269
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Insulin and Schizophrenia—Lemere treated seventeen cases of dementia praecox chronic in nature with symptoms of more than eighteen months' duration, with insulin shock. There was a complete remission rate of 23 per cent, as compared to the usual expectancy of 10 per cent in untreated cases. In the nine cases of dementia praecox, recent in nature with symptoms of less than eighteen months' duration, treated with insulin shock there was a complete remission rate of 78 per cent as compared with the usual expectancy of 30 per cent in untreated cases. Insulin shock recovery is better in quality and more rapid in accomplishment than spontaneous remission. Best results are obtained in inverse relation to the duration of illness and chronicity of the psychotic episode. The sooner the condition is recognized and treated the better the results.

Temporizing only leads to the development of irreversible personality changes and deterioration. There is no evidence of any harmful sequels, either physical or mental, as the result of the treatment. All the patients gained physically, and usually they put on weight. Injudicious treatment, with the production of many convulsions, might irreversibly affect the substance of the brain through small hemorrhages. Recent experimental work with the electro-encephalograph during insulin shock has convinced the author that the action of insulin is nonspecific. Any agent that produces a convulsant-like action on the cortex would produce the same result. It just happens that insulin is the most convenient drug, since its action may be stopped almost immediately by the administration of sugar. Almost any psychotic case not definitely organic and not definitely in the manic-depressive group is suitable for this treatment, provided the psychosis is of recent onset.

Ohio State Medical Journal, Columbus

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 An Oil Immersed X-Ray Outfit for 500 000 Volts and an Oil Immersed Multisection X-Ray Tube E. E. Charlton G. Hotelling W. F. Westendorp and L. E. Dempster Schenectady N. Y.—p. 329
 Thimble Ionization Chamber O. Glasser and J. Victoreen Cleveland—p. 341
 Studies on Radiosensitivity of Mouse Sarcoma 180 Irradiated in Vivo and in Vitro K. Sugiura New York—p. 352
 *Radiation Therapy in Excessive Uterine Bleeding from Causes Other Than Cancer Report on 327 Cases R. H. Lafferty and C. C. Phillips Charlotte N. C.—p. 362
 Some Lawsuits I Have Met and Some of the Lessons to Be Learned from Them (Second Series Third Instalment) I. S. Trostler Chicago—p. 365

Rate of Recovery of Skin from Effects of Irradiation
 —Qumby and MacComb give data that permit the computation of the approximate cumulative dose of radiation in the skin at any time during the treatment period. Studies have also been made of the effect of different fractionations of a certain dose delivered in a specified period, and of the effect of varying the intensity of the radiation when a specified total dose is delivered in a given time. Curves and a table are presented from which the accumulated dose in the skin can be calculated for any day during the treatment period. It is shown that, if sufficient radiation is administered in a specified time to produce the threshold effect within the experimental limits investigated, it makes no difference whether it is delivered in small doses with short intervals or in larger ones with longer intervals. If the radiation is administered in a given period it makes no difference within the experimental limits investigated,

whether it is delivered in long treatments of low intensity or in short ones of low intensity. The saturation method of dose calculation cannot be justified when a constant daily recovery factor is assumed. Since the amount of recovery decreases from day to day, it is necessary to know the correct recovery factor for every day. A method is outlined for calculating a true saturation scheme of irradiation.

Irradiation in Uterine Bleeding Other Than from Cancer—From a study of the literature and their 327 cases in which permanent menopause was attempted over a period of seventeen years Lafferty and Phillips conclude that irradiation is the method of choice in the treatment of menorrhagia other than that due to cancer. There are certain contraindications: large rapidly growing fibroids, those causing pressure symptoms demanding quick relief, pedunculated tumors, uterine polyps, tumors that can be removed leaving the uterus intact, tumors that have undergone cystic degeneration, ovarian cysts, extreme mental depression and cases in which partial hysterectomy has been done and bleeding continues from uterine residue. No woman in the child bearing period and having no tumor should be subjected to irradiation until all other methods of treatment short of hysterectomy have failed to effect a cure. There were fourteen patients who were not cured, in eight of whom there were contraindications to treatment. Of the 319 cases treated, 313 were cured, while six did not get satisfactory results. 98.1 per cent cured. Radium is used in cases in which it is necessary to check the bleeding quickly and in those in which cancer of the fundus is suspected. In cases treated with X-rays, from 1,200 to 1,800 roentgens was used; the average amount of treatment being 1,500 roentgens. This variation depends on the age of the patient and also the thickness of the parts. This treatment is divided into doses of 300 roentgens given once each week, alternating one anterior and one posterior field. The other factors used were from 120 up to 220 kilovolts and filter from 4 mm. of aluminum up to 2 mm. of copper and a 50 cm. distance. In cases treated with radium from 800 to 1,200 mg. hours, the average amount being 1,000 mg. hours, 1 mm. of platinum and 1 mm. of rubber filter were used.

Rhode Island Medical Journal, Providence

20 123 138 (Aug.) 1937

- Intestinal Tuberculosis G. A. Moore Brockton Mass.—p. 133

Science, New York

86 181 202 (Aug. 27) 1937

- Control of Population Growth S. J. Holmes San Francisco—p. 181
 Newer Biologic Aspects of Protein Chemistry M. Bergmann and C. Niemann New York—p. 187
 Action of P-Aminophenol on Tissue Oxidations F. Bernheim and N. L. C. Bernheim Durham N. C.—p. 197
 Vitamin B₁ and Synthesis of Fat from Carbohydrate E. W. McHenry Toronto—p. 200
 Experimental Production of Intersexuality in Female Rat with Testosterone R. R. Greene and A. C. Ivy Chicago—p. 200
 Clot Prevention in Blood Studies in Animals S. Nittis Ann Arbor Mich.—p. 201
 *Convenient Method of Securing Blood for Analysis E. N. Abraham—p. 202

Method of Securing Blood for Analysis—Abraham states that the difficulties encountered in securing blood for analysis may be obviated by pricking the finger with a lancet and letting the blood drop onto a petrolatum block with a depression on it. Slight pressure proximal to the wound or a rubber band placed round the finger will produce free flow and as much as 1 cc. of blood may be obtained readily. The blood can then be drawn up into the pipet. The blood will not clot on the petrolatum in the short time necessary for collection. A muffin tin consisting of six depressions in a tin plate, is used in making the petrolatum blocks. The depressions are filled with melted petrolatum and then set aside to cool. The contraction of the paraffin in cooling will produce a smooth depressed surface that serves admirably for the collection of blood.

South Carolina Medical Assn Journal, Greenville

33 207 228 (Sept.) 1937

- Intrapleural Pneumolysis Procedure in Treatment of Cavernous Tuberculosis W. H. Prieoleau and W. A. Smith Charleston—p. 207
 Some Facts Concerning Living Graduates of the State Medical College J. T. Marshall Barnwell—p. 208

Southern Medical Journal, Birmingham, Ala

30 769 872 (Aug) 1937 Partial Index

- Tuberculosis in Childhood J B Sidbury Wilmington N C—p 769
Transplantation of Human Cornea Preliminary Report J W McKinney Memphis, Tenn—p 779
Nonoperative Treatment of Fractures and Dislocations of Spine E T Newell Chattanooga Tenn—p 799
Surgical Treatment of Low Back Pain and Sciatica R A Ghormley and H R Wesson Rochester Minn—p 806
Treatment of Procidencia Uteri by Vaginal Route O S Cofer Atlanta Ga—p 811
Drainage as Factor in Treatment of Lobar Pneumonia C H Sanford Memphis, Tenn—p 819
Cardiologic Significance of Epigastric Pain C Stanley, Washington D C—p 839
First Twelve Months of Infancy as Test for Community Incidence of Initial Attacks of Malaria H C Clark Panama Republic of Panama—p 848
Some Recent Advances in Epidemiology of Malaria G E Riley Jackson Miss E C Faust New Orleans, and S S Cook Washington D C—p 856
Experiences with Minor Drainage in Relation to Malaria Rates in Some Mississippi Delta Counties G E Riley and N H Rector Jackson Miss—p 862

30 873 962 (Sept) 1937 Partial Index

- Prevention and Treatment of Surgical Shock I R Trimble Baltimore—p 876
*Surgical Treatment of Glaucoma A C Woods and E P Burch 2d Baltimore—p 888
*Surgical Consideration of Typhoid Carrier F S Lynn Baltimore—p 896
Radiation Therapy of Carbuncles C O King Birmingham Ala—p 903
Skin Disease and Internal Medicine L W Ketron Baltimore—p 915
Food Allergens Statistical Analysis of Forty Three Cases Relative to Genetic Classification of Foods O R Withers Kansas City Mo—p 918
Proper Criteria for Lip Reading Recommendation Medical and Educational Considerations M L Breinstein and Olive Whildin Baltimore—p 924
Malaria Mortality in the United States, with Especial Reference to the Southeastern States C C Dauer and E C Faust New Orleans—p 939
Distribution of Anopheles Albimanus and Its Occurrence in the United States W V King Orlando Fla—p 943
Relation Between Breeding Area Anopheles Albimanus Density and Malaria in Salinas Puerto Rico W C Earle San Juan Puerto Rico—p 946
Length of Life of Anopheles Maculipennis Variety Atroparvus Rolla B Hill New York—p 952

Surgical Treatment of Glaucoma—In the analysis of their operative experience on 108 patients during a period of twenty eight months, Woods and Burch suggest the following rigid criteria 1 The corrected vision following operation must at least closely approximate the best vision immediately prior to operation, unless there can be shown to exist a definite cause for the deterioration of the visual acuity totally unrelated to the glaucoma or the operative procedure 2 The field of vision must be maintained at such a point that it compares favorably with the field recorded before operation 3 The intraocular tension must consistently be within the normal range following operation, without the use of miotic drugs Cases in which there has been even a moderate loss of vision, appreciable loss of the visual field or tension ranging over 25 mm on the new Schiotz scale are considered failures The procedure of von Graefe has given the best results in acute congestive glaucoma in a series of fourteen cases A total of ninety-four eyes, diagnosed as glaucoma simplex (chronic primary glaucoma), have been subjected to some type of fistulizing operation A comparison of the total number of trephines and iris inclusions in chronic primary glaucoma, including both white and Negro patients, shows that a successful operative result was obtained in twenty-three of thirty-five, or 65.7 per cent, of the trephined eyes as compared with forty-four of fifty-nine, or 71 per cent, of the eyes subjected to some type of an iris inclusion procedure Of the three cases of acute glaucoma secondary to uveal inflammation in which operation was performed, one case was controlled by a broad iridectomy while two cases were controlled by an iridotaxis Chronic secondary glaucoma differs from acute secondary glaucoma only in its chronicity Seven such eyes have been trephined, with four successes Iridencleisis has been done in thirteen instances, with eleven successful results and two failures Iridotaxis has been done only once, and thus with success An iridectomy produced a good result in one of two cases In the Negro race a trephine, an iridencleisis and a cyclodialysis each failed in one instance while an iridotaxis gave a good result in three of five cases The operative results in

ocular hypertension secondary to thrombosis of the central vein of the retina have been uniformly unsuccessful in a series of nine cases Trephines were done twice, iridencleisis and iridotaxis three times each and an iridectomy once Most of these eyes were subsequently enucleated because of pain after repeated operative attempts to control the tension In white children a trephine was unsuccessful in four cases of buphthalmos, an iridencleisis succeeded in four of seven cases, while an iridotaxis gave a good result in one of two cases In the only Negro patient an iridencleisis combined with anterior sclerectomy successfully controlled the tension in both eyes There are only three white patients having glaucoma in aphakia A trephine brought about a good result in one of the cases, while a cyclodialysis failed in two instances Iridotaxis was done twice with a successful issue in both instances

Surgical Consideration of Typhoid Carrier—Lynn suggests that the surgeon lend his efforts to the health department for the further eradication of typhoid There are approximately 158 persons in Maryland who are potential sources of infection, and to these carriers a total of 627 cases of typhoid can be attributed All these 158 carriers were proved to be so by bacteriologic examination A person may be a carrier and a potential source of danger without ever having had the disease This fact adds to the difficulty in the proper management of this group of persons, as it is not common for them to suffer because of their being carriers Over a long course of years the use of intestinal and urinary antiseptics has proved inadequate The procedure of the health departments of some cities and states, among which Baltimore and Maryland are included, is to determine the focus of infection, then it is of the utmost importance to determine whether the typhoid bacilli are present in the bile The surgical management of these persons is advocated The encouraging reports of cholecystectomy by numerous authors has influenced health authorities to seek the cooperation of surgeons in carrying out the operation that has proved most efficient The results following cholecystectomy have been sufficiently encouraging to recommend it, provided a sufficient length of time has elapsed following the attack of typhoid, that it has been proved that the gallbladder harbors the typhoid bacillus, and that the condition of the person justifies cholecystectomy The greatest difficulty encountered by the health authorities is persuading these carriers to submit to surgery, because most of them feel well and present no subjective symptoms It is hard, therefore, to convince them that such an operation would benefit other people So, like all other health measures, it resolves itself into a campaign of education The results obtained by the various authors on the subject show that cures have been obtained in from 80 to 85 per cent of the persons submitting to operation It behooves surgeons to cooperate with the health authorities in this important matter and thereby make a substantial contribution to preventive medicine

Southwestern Medicine, Phoenix, Ariz

21 263 300 (Aug) 1937

- Notes on Thyroid Function G Werley El Paso Texas—p 263
Industrial Surgery Responsibility of Organized Medicine and of Industrial Surgeons R F Palmer Phoenix Ariz—p 264
Five Year Results of Thoracoplasty V S Randolph Phoenix Ariz—p 274
Mechanical Derangements of Knee Joint M S Henderson Rochester Minn—p 277
Radium and Nasal Polyps L L Albert Tucson Ariz—p 280
Functional Cardiovascular Disorders Cardiac Neurosis W C Menninger Topeka Kan—p 281

Western J Surg, Obst & Gynecology, Portland, Ore

45 409-466 (Aug) 1937

- The Thyrocardiac N M Percy Chicago—p 409
Urinary Iodine in Thyroid Disease G M Curtis and I D Puppel Columbus Ohio—p 417
Iodine Metabolism Normal and Abnormal Its Relation to Reticulo-Endothelial System J I DeCourcy Cincinnati—p 432
Iodine Response and Some Other Factors in Relation to Mortality in Thyrotoxicosis J Lerman Boston—p 439
Needless Thyroid Surgery Analysis of 100 Cases A S Jackson Madison Wis—p 448
Treatment of Three Duodenal Fistulas by Biophysicochemical Solutions with Simple Apparatus for Combined Irrigation and Suction G R Vebbs Salem Ore—p 453
Use of Prostigmin as Prophylactic Against Abdominal Distention H B Hendler New York—p 458

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

49 347 408 (Aug. Sept.) 1937

- On Getting the Rash Out' W. Langdon Brown—p. 347
Ulceration of Skin Caused by Diphtheroid, *Bacillus* H. W. Barber, P. L. Giuseppe and F. A. Knott—p. 360
Atrophy of Hair Follicles and Nail Matrix in Lichen Planus H. Corsi—p. 376

British Journal of Radiology, London

10 573 636 (Aug.) 1937

- *Radium in Treatment of Leukemia C. G. Parsons—p. 573
Radiation Dosimetry Part I L. H. Gray—p. 600
Cleidocranial Dysostosis Case J. P. Steel and P. H. Whitaker—p. 613
Some Biologic Effects of Continuous Gamma Irradiation with Note on Protection S. Russ and G. M. Scott—p. 619
Filament Changing Device for Continuously Evacuated X-Ray Tubes F. E. Bancroft—p. 630

Radium in Treatment of Leukemia—Parsons reviews the results of using radium in the treatment of sixteen cases of leukemia. Two of the patients were suffering from chronic lymphatic leukemia and the others from chronic myeloid leukemia. The radium has been applied in large doses to the splenic area, patients usually received a course of treatment once each year. Application was made only (except in one case) to the splenic area of from 250 to 300 mg of radium screened by 2 mm of lead, for three daily periods of fifteen hours. By this means treatment is easily administered and produces satisfactory results both on the general condition of the patient and on his blood picture. It is not claimed that radium provides a greater expectation of life than roentgen irradiation, but from the results obtained it is argued that the treatment, being less frequent, is preferred by the patients, that unpleasant and dangerous reactions are both less severe and less constant, and that this form of therapy is quite as effective in the relief of symptoms as roentgen irradiation. The action of radium on the blood picture is discussed and, like x-rays, is shown to influence the immature pathologic leukocytes to a greater degree than the more normal white cells, while anemia is relieved. The presence of severe anemia or of a large number of nucleated red cells is a bad prognostic sign. No cases resistant to treatment have been found, and treatment by radium appears to hold a number of advantages over treatment by x-rays. The results of treatment by radium have on the whole been very satisfactory, especially in the relief of symptoms. After treatment most of the patients have remarked spontaneously that they felt well and have in many cases been able to resume their work. The spleen has diminished in size, weight has been gained, energy has returned, the anemia has improved, digestive disturbances have disappeared, and the white blood count has been improved by the applications. It is difficult to say quite how radium acts. In the selection of cases for radium treatment only two essentials are required: the patient should be suffering from chronic leukemia and the spleen should be enlarged sufficiently to allow the fitting of an applicator.

British Medical Journal, London

2 307 358 (Aug. 14) 1937

- Individual Variation in Response to Drugs A. J. Clark—p. 307
Food Requirements and Food Intakes R. A. McCance and E. M. Widdowson—p. 311
Treatment of Nonstenosing Peptic Ulcer J. Morley—p. 312
Value of Paternity Exclusions Made by Blood Grouping Test J. C. Thomas—p. 315
Technic of Cataract Extraction During Narcosis B. Graves—p. 319

East African Medical Journal, Nairobi

14 153 186 (Aug.) 1937

- Vaccines R. M. Dowdeswell—p. 154
Unusual Case of Duodenal Ulcer C. V. Braimbridge—p. 172

Edinburgh Medical Journal

44 497 560 (Aug.) 1937

- Chemotherapeutic Antiseptics C. H. Browning—p. 497
XVI Cysticercosis and Epilepsy E. D. W. Greig—p. 522
Structural Anomalies of the Forefoot in Relation to Some Metatarsal Disturbances J. Bruce—p. 530
Debatable Tumors in Human and Animal Pathology I. Lympho-Epithelioma W. F. Harvey, E. K. Dawson and J. R. M. Innes—p. 549

Irish Journal of Medical Science, Dublin

No. 139 285 328 (July) 1937

- Undulant Fever in Ireland W. P. O'Callaghan—p. 285
*Acute Anterior Poliomyelitis: Relationship of Injury to Localization of Paralysis H. L. Parker—p. 303
Purulent Pericarditis R. H. Micks—p. 306
Notes on a Case of Poisoning by *Oenanthe Crocata* (Water Dropwort) J. McGrath—p. 309

Acute Anterior Poliomyelitis—Parker says that, out of thousands of cases of acute anterior poliomyelitis observed every year, injury has never been given a position of importance in the localization of the paralysis. Should the site of injury be considered as the determining factor in the localization of the paralysis, a field of interesting abnormal physiology is opened up. It is reasonable to assume that a gross injury to a limb must produce reflex changes in the central nervous system. The problem here is that while the part injured was peripheral in location the damage was central. In this connection the work of Hughlings Jackson comes to mind. Assuming that the spinal cord is affected by an acute disease, it should be reasonable to think that the part first affected would be that disordered as a result of incoming morbid stimuli. Reflex paralysis, a rare clinical syndrome, has been described by Purves Stewart. In this condition a more or less trivial injury determines a motor, secretory and vasomotor phenomenon in a limb. The assumption here is that some reflex change has occurred in the spinal cord determining the paralysis. Admittedly rare, a sufficient number of cases has been reported to make the condition a clinical entity. Some changes must occur in the spinal cord following injury to a limb or other part of the body, and whether these play any part in the determination of the localization of damage to the anterior horn cells in a patient stricken by acute anterior poliomyelitis remains a work for future observers.

Journal of Anatomy, London

71 423 558 (July) 1937

- Nature and Mode of Origin of Foramen of Magendie J. T. Wilson—p. 423
Some Observations on Major Subdivisions of Marsupialia with Especial Reference to Position of Peramelidae and Caenolestidae A. A. Abbie—p. 429
Cor. Biloculare with Note on Development of Pulmonary Vessels F. Davies and M. A. MacConaill—p. 437
Course of Fibers in Dorsal Nerve Roots of Macaca Mulatta the Rhesus Monkey J. Z. Young and S. Zuckerman—p. 447
*Normal Facial Growth in Children M. Young—p. 458
Growth of Cartilage Canals in Patella R. W. Haines—p. 471
Continuity in Nerve Fibers H. H. Woollard—p. 480
Lymphatics of the Stomach J. H. Gray—p. 492
Innervation and Morphology of Cervical Intertransverse Muscles A. J. E. Cave—p. 497

Normal Facial Growth in Children—Young bases his remarks on a study of 1,200 children between the ages of 8 and 14 and 100 children between 2 and 5 years. The sexes were about equally represented. The two dental arches, exhibiting what is regarded as morphologically normal occlusion, were selected for measurement. 1 The mode of growth of the face from 2 to 15 years of age follows a uniform pattern in normal children. 2 The proportionate increase in facial growth antero-posteriorly, i. e., facial depth, is greater in the region of the lower jaw than in that of the upper. 3 The proportionate increase in total height of the face appears to be rather less than that in the upper facial height. 4 The increase in upper facial breadth is less in degree than that shown in both facial depth and facial height. 5 The ratio of facial height to facial breadth increases with age. 6 The portion of the dental arch occupied by the deciduous and later by the permanent teeth becomes part of a wider arc but does not increase in length. 7 The vertical axes of growth in the upper part of the face are more closely correlated with one another than with those of the lower part of the face, i. e., the maxillary growth is to some extent independent of mandibular growth. 8 The face widens relatively more in its lower than in its upper region. 9 A relatively long face shows a slight tendency to be accompanied by a relatively high palate. 10 Though the absolute width of the upper dental arch is significantly correlated with the bizygomatic breadth, there appears to be no appreciable association between a relatively narrow face, as expressed by the facial index, and a narrow dental arch. 11 A narrow face shows a tendency to be deep or long anteroposteriorly.

Journal of Laryngology and Otology, London

52 527 588 (Aug.) 1937

Glossopharyngeal Neuralgia H Cohen —p 527
Laryngeal Tuberculosis T Ruedi —p 537**Journal of Pathology and Bacteriology, Edinburgh**

45 1 316 (July) 1937 Partial Index

Pulmonary Actinomycosis Caused by an Acid Fast Species of Actinomyces N E Goldsworthy —p 17
Osteoporosis in a Rabbit with Osseous Changes Resembling Paget's Disease J W Orr —p 29
Development of Terminal Air Passages of Human Lung W G Barnard and T D Day —p 67
*Study of Acute Ileocolitis (Dysentery) in Children J W S Blacklock and Katharine J Guthrie —p 79
*Subcutaneous Nodule of Rheumatoid Arthritis D H Collins —p 97
Proliferation of Lymphatics in Inflammation B D Pullinger and H W Florey —p 157
Investigation into Influence of Estrone on Growth and on Genesis of Malignant Cells Mary D Gilmour —p 179
Postpartum Necrosis of Anterior Pituitary H L Sheehan —p 189
Traumatic Autoplastic Transplantation of Splenic Tissue in Man with Observations on Late Results of Splenectomy in Six Cases A F B Shaw and A Shafi —p 215
Study of Pneumococcal Allergy and Immunity D Harley —p 257
Circulating Antitoxin and Resistance to Experimental Infection with Staphylococci Margaret Llewellyn Smith —p 305

Dysentery in Children—Blacklock and Guthrie are of the opinion that acute ileocolitis (dysentery) in children appears to have increased in recent years, particularly the Sonne type. Infants less than 1 year of age are less frequently affected than older children, but the mortality is higher in the former. Of 215 cases investigated, 193 were examined bacteriologically, of which 112 (58 per cent) yielded dysentery strains (sixty-one Flexner, forty-five Sonne and six atypical). The presence of blood in the feces appeared to favor isolation of the specific organisms, which at times were extremely scanty. The fermentation reactions were not quite constant for the Flexner and Sonne types and serologic testing was considered more reliable for diagnosis, though a few strains were inagglutinable when first isolated. A closer serologic relationship existed between Sonne than between Flexner strains, the latter showing marked heterogeneity. Clinically, Flexner as compared with Sonne infections were generally accompanied by severer toxemic, circulatory and cerebral manifestations. Occasionally Sonne infections were fulminating. At necropsy, pathologic changes were more pronounced in the solid viscera in Flexner than in Sonne infections. The intestinal lesions—catarrhal, membranous and ulcerative—were largely confined to the terminal ileum and colon, except in infants, in whom at times a diffuse enteritis was present. Positive cultures were obtained after death much more frequently from the mucosa of the colon than from any other part of the intestine or its contents.

Subcutaneous Nodule of Rheumatoid Arthritis—Collins examined many nodules from patients with rheumatoid arthritis and compared these with subcutaneous nodes arising in rheumatic fever and as a result of injury alone. From these studies he has attempted to define the pathologic course of the nodule in rheumatoid arthritis and to form an opinion concerning the significance of the changes found. The essential pathology of these structures is a combination of proliferation and degeneration of connective tissues, accompanied by new formation of vessels at the margin of the lesion and by infiltration with lymphocytes and plasma cells. The gross nodule increases in size not only by the growth of a single necrotic focus and the reaction of the cells around it but also by the aggregation of separate foci individually formed by the same processes of proliferation and degeneration. Very frequently early and late stages in the development of these foci may be found side by side in the same piece of tissue. There is strong clinical evidence that traumatic influences determine the sites of occurrence of these lesions, and continued exposure to trauma may play a part in their later development into structures that resemble bursae. Trauma in itself is not responsible for the nodule in rheumatoid arthritis. The early proliferative and degenerative changes of the connective tissue in the rheumatoid arthritic nodule resemble those in rheumatic fever, but in the former proliferation precedes degeneration, which is contrary to the sequence of events supposed by most authors to occur in the nodule of rheumatic fever. The histology of the more fully developed lesion in rheumatoid arthritis is quite typical

of that disease and bears very little resemblance to the lesion of rheumatic fever. The degree of vascular proliferation and of invasion by the polymorphonuclears is much greater in rheumatic fever, whereas the foci of necrosis are larger and the fibroblastic reaction around these foci is much more pronounced in rheumatoid arthritis. Neither lesion bears much resemblance to the changes of the tissue in any other disease, but there is enough evidence to postulate either a close pathologic relationship or a common etiology of these structures. There are many dissimilarities and no evidence that spirochetal infection causes the subcutaneous nodules of rheumatoid arthritis. Bacteriologic examinations were negative. The reactions of connective tissue, blood vessels and small round cells, together with the peculiar degenerations of the connective tissue, suggest that the nodules are fundamentally granulomas arising in tissues whose inflammatory reactions are modified in a manner with which one is still unfamiliar.

Journal of Physiology, London

90 257 370 (Aug 17) 1937

Liberation of Histamine from Perfused Lung by Snake Venoms W Feldberg and C H Kellaway —p 257
Liberation of Histamine from Perfused Lung by Staphylococcus Toxin W Feldberg and E V Keogh —p 280
Liberation of Histamine from Perfused Lung by Peptone W Feldberg and W J O Connor —p 288
Study of Cholesterol in Adrenal Gland in Different Phases of Reproduction in Female Rat, Dorothy H Andersen and W M Sperry —p 296
Action of Adrenalin on Serum Potassium J L D Silva —p 303
Antistrychnine Action of Acetylcholine Prostagmin and Related Substances and of Central Vagus Stimulation A Schweitzer and S Wright —p 310
Behavior of Crystallized Secretin When Digested with Proteolytic Enzymes G Agren and E Hammarsten —p 330
Aerobic Metabolism of Isolated Frogs Heart Poisoned by Iodoacetic Acid A J Clark R Gaddie and C P Stewart —p 335
Contribution to Study of Ciliary Movement A E Barclay K J Franklin and R G Macbeth —p 347
*Source in Blood of Histamine-like Constituent C F Code —p 349
Reactivity During Estrus and Pregnancy of Rat Uterus to Oxytocin Principle of Posterior Pituitary Gland J B Brooksbey —p 365

Blood Histamine—Code made a study of the substance, acting like histamine, extractable from normal blood by a method modified from that of Barsoum and Gaddum. In the clotted blood of rabbits from 60 to 90 per cent of the total histamine-like substance extracted from whole blood was found in the serum. Plasma and red cells yielded no significant amount of the active substance. The clotting of plasma out of contact with the cellular elements of blood did not alter its histamine equivalent. In the rabbit, the horse, the dog, the goat, the bullock and man from 70 to 100 per cent of the histamine-like substance extractable from whole blood was contained in the white cell layer of the centrifugated unclotted blood. In the process of clotting, the histamine-like substance normally confined to the leukocytic layer of the blood of the rabbit was freed and appeared in the fluid portion of the blood.

Journal of Tropical Medicine and Hygiene, London

40 173 184 (Aug 2) 1937

Experimental Studies on Endamoeba histolytica in the Dog Preliminary Report J C Swartzwelder —p 173
*Iodoform in Treatment of Amebic Colitis C Scott —p 174
Control of Bilharzia Infection by Natural Remedies F G Cawston —p 177

Treatment of Amebic Colitis—Scott used iodoform orally in the treatment of eight cases of amebic colitis by Castellani's method. A saline purgative (magnesium sulfate from 25 to 30 Gm) was administered and the stools were examined for Endamoeba histolytica. Once the presence of the parasite was ascertained treatment was begun by keeping the patient in bed and on a light diet. The iodoform was administered in keratinized capsules of 0.05 Gm for each dose. Beginning with an initial daily dose of 0.05, 0.1 or 0.15 Gm a maximal daily dose of from 0.2 to 0.3 Gm was reached. The patients thus treated were insistently asked to make known any subjective sensation and any objective phenomena they thought abnormal. At the end of the treatment lasting from twelve to twenty days examination was again made after a saline purgative. Consistently good results were obtained, the symptoms and the endamebas disappeared from the stools. In one case alone, which had also resisted the emetine treatment, the coprologic examination was still positive after the administration

of iodoform, although there was improvement in the clinical symptoms. There were no phenomena of intolerance nor appearance of rash. There were never any signs of irritation in the digestive tract. In one patient with extrasystolic arrhythmia and tachycardia, the iodoform induced an attenuation of the cardiac symptomatology. The results in these eight cases of amebic colitis, subacute and chronic, fully confirm those obtained by Castellani.

Lancet, London

2 361 420 (Aug. 14) 1937

- Transfusion of Stored Cadaver Blood: Practical Considerations. The First Thousand Cases. S. S. Yudin—p. 361.
Arterial Pulse in Health and Disease. C. Bramwell—p. 366.
Permanent Experimental Diabetes Produced by Pituitary (Anterior Lobe) Injections. F. G. Young—p. 372.
Gonococcal Pyonephrosis. A. H. Harkness and R. G. Worcester—p. 375.
Pneumolysis Combined with Extrapleural Pneumothorax and Oleothorax. B. Rhodes—p. 377.

Nature, London

140 253 294 (Aug. 14) 1937

- Lecithinemia Following Administration of Fat. G. Hevesy and E. Lundsgaard—p. 275.
*New Source of Vitamin A. J. A. Lovern, J. R. Edisbury and R. A. Morton—p. 276.
Isolation of Ascorbic Acid from Urine. C. P. Stewart, H. Scarborough and P. J. Drumm—p. 282.

New Source of Vitamin A.—In the course of a study of the mode of occurrence and distribution of vitamin A, Lovern and his colleagues found that the viscera (excluding the livers) of the halibut yield abnormally rich oils. The fish were caught in Shetland waters in May this year. The viscera are normally thrown into the sea although they may contain, as in these cases, as much vitamin as the liver and may yield more potent oils.

Quarterly Journal of Medicine, Oxford

6 231 352 (July) 1937

- Lipopenia of Hyperthyroidism. E. M. Boyd and W. F. Connell—p. 231.
Influence of Cerebrospinal Fluid in Acromegaly on Urinary Excretion of Chlorides. P. Ellinger, Dorothy C. Hare and S. L. Simpson—p. 241.
*Chronic Nonleukemic Myelosis. R. A. Hickling—p. 253.
Fate of Elements Removed from Blood Stream During Treatment of Polycythemia by Acetyl Phenylhydrazine. R. A. McCance and E. M. Widdowson—p. 277.
Quantitative Estimation of Pancreatic Islet Tissue. R. F. Ogilvie—p. 287.
Second Positive Wave of QRS Complex. A. Hope Gosse and T. E. Lowe—p. 301.
*Porphyria in Pellagra. W. Beckh, P. Ellinger and T. D. Spies—p. 305.
Organic Mercurial Diuretics in Treatment of Cardiac Edema. W. A. R. Thomson—p. 321.

Chronic Nonleukemic Myelosis.—Hickling uses the term "chronic nonleukemic myelosis" to refer to all patients who present massive enlargement of the spleen due to myeloid metaplasia, in whom the characteristic blood picture of leukemic myelosis is not found. The diagnosis of chronic nonleukemic myelosis depends on the finding of immature red and white cells in the circulating blood, without the great increase in the total number of leukocytes characteristic of leukemia, in a patient with massive enlargement of the spleen. Fifteen of the twenty-seven patients mentioned in the literature in whom splenectomy was performed died within a few days of the operation, and in those which survived, the subsequent course of the disease was not beneficially affected by the operation. There was no resultant striking improvement in the patient's health. Seven cases are reported which the author includes under the title of chronic nonleukemic myelosis. All have been inpatients on at least one occasion at Charing Cross Hospital. He has seen them at intervals of a few months since they first came under his observation. The features common to all the cases are (1) a chronic course (varying from eighteen months to thirteen and a half years), (2) progressive splenic enlargement reaching a great size, and enlargement of the liver, (3) absence of enlargement of the lymphatic glands and (4) the constant presence in the blood of immature myeloid cells during the time under observation, with the constant presence of nucleated red cells in some cases, and their presence at some time in all, even in the absence of anemia. The shortest period of observation was two years. In all cases the blood Wassermann reaction was negative, and

in none was there any family history of splenic enlargement, jaundice or anemia. Certain features occur in chronic nonleukemic myelosis which either do not occur in or are much less common in leukemic myelosis. These are sclerotic changes in the bone marrow, with new bony formation in the marrow cavities of the bones, and the presence of giant cells in association with the myeloid metaplasia, of such size and in such numbers as to form its most striking feature. These two features have been found together in some cases, in others either one or the other has been found, and in others neither has been demonstrated. A high bilirubin content of the blood and a high blood uric acid value are more common in the cases here considered than they are in cases of leukemic myelosis. These two features seem to suggest an increased destruction of blood cells. The danger of surgical intervention (splenectomy) is emphasized by cases collected from the literature and by its effect in one case in the author's series.

Porphyria in Pellagra.—Beckh and his co-workers studied the urinary output of porphyrin in fourteen cases of alcoholic pellagra, two cases of pellagra secondary to infectious disease of the gastro-intestinal tract and three cases of healed pellagra, also as controls in eighteen healthy persons, forty-nine persons suffering from various diseases other than pellagra, two monkeys with mild nutritional macrocytic anemia and five normal subjects receiving yeast and five receiving liver extract. While the cases of endemic pellagra observed by Ellinger and Dojmi had in the beginning of the disease a high porphyrin output usually disappearing early in remission but always when cured, the porphyrin output of the alcoholic cases in the authors' study showed a greater variation. In most of the latter cases the porphyrin excretion bore a rough relationship to the intensity of the cutaneous lesions and the lesions of the mucous membrane as the patients were watched in their progress toward recovery. On the other hand, among the patients showing no porphyria there were mild cutaneous lesions in three cases and none in one. The greater variability of porphyria in the alcoholic pellagrins may be in relation to the history of alcoholism. On the sixty-seven control subjects only five showed an increased porphyria, three of whom were receiving iron therapy. The porphyrin present in the cases of pellagra was found to be a coproporphyrin. A similarity is pointed out between the clinical symptoms of acute porphyria and pellagra. One case of pellagra is described which exhibited all signs of an acute porphyria.

Chinese Medical Journal, Peiping

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- Spontaneous Remissions and Reported Cures of Leukemia. C. E. Fickner—p. 1.
Normal Variations of Leukocytes of Young Adult Chinese. T. L. Kean—p. 9.
Congenital Urethral Valves. H. E. Shih and C. Y. Char—p. 19.
Present Position of Collapse Therapy in Treatment of Pulmonary Tuberculosis. W. I. Gerard—p. 33.
Recent Studies on Etiology of Epidemic Influenza. F. F. Tang—p. 41.
Ophthalmic Surgery Among the Chinese, with a Brief Study of 100 Cases. F. S. Tsang—p. 53.
Application of Kahn and Kline Tests to Anticomplementary Serums for Diagnosis of Syphilis. S. N. Tsao—p. 69.
Bactericidal and Destructive Effects of Dakin's Solution on Tubercle Bacilli. B. H. Tang—p. 77.
Acute Inflammation of Meckel's Diverticulum with Intestinal Obstruction. Report of Case. N. C. Kung—p. 85.
Ya Tan Tzu—New Specific for Amebic Dysentery. H. L. Lui—p. 8.
Gangrenous Stomatitis with Especial Reference to Subtertian Malaria as Etiologic Factor. Z. U. Zee and R. M. Paty Jr.—p. 95.
Obstructed Labor Due to Leiomyoma. H. Yuen and R. Bolton—p. 101.
Dangers Associated with Use of Ultraviolet Ray Lamps in the Home. C. Nurnberger—p. 103.
Wire Needle in Abdominal Cavity. An Accident in Acupuncture. Y. C. Yin—p. 107.

Japanese Journal of Gastroenterology, Kyoto

9 77 162 (July) 1937

- Clinical and Experimental Studies on Metabolism of Cholesterol. Parts I to IV. K. Kamei—p. 77.
Influence of Blood Serum of Patients with Chronic Myeloid Leukemia on Tissue Culture of Blood Building Organs and Tissue. K. Kamei—p. 102.
On Influence of Aromatic Compounds on the Liver Function. Part I to III. T. Inagaki—p. 108.
Experimental Studies on Metabolism of Bile Acids During Anesthesia. State of Liver Function. K. Kobayashi—p. 143.
On an Urine Fraction Promoting the Hepatic Function. M. Matsuda and H. Takahashi—p. 159.

Gynecologie et Obstetrique, Paris

36 81 208 (Aug) 1937 Partial Index

Treatment of Urinary Incontinence in Women M Muret and O J Rapin—p 81

*Treatment of Vesicovaginal Fistulas C P Andre—p 114

Uteroplacental Apoplexy A Couvelaire and R Couvelaire—p 143

Treatment of Uteroplacental Apoplexy A Weymeersch and J Snoeck—p 156

Treatment of Urinary Incontinence in Women—Muret and Rapin discuss the treatment of the most frequent form of urinary incontinence in women, which they define as the condition connected with the prolapse of the vagino-urethral wall at the level of the trigono-urethral sphincter with or without local organic lesions and cicatricial adhesions. They discuss the nonsurgical treatment by means of pessaries and cauterization but point out that the preferred treatment is surgical. The most simple and the most generally utilized method consists in suturing widely in the course of an anterior colporrhaphy (perhaps sufficient by itself), the tissues adjoining the region of the exposed sphincter, this suture unites the tissues in the median line, starting from the lateral walls of the pelvis and the pubic arch, the posterior wall of the urethra is thus elevated, supported and approximated to the anterior wall at the level of the sphincter. The muscular suture of the latter can be dispensed with save in exceptional cases. On the other hand, in case of cicatricial adhesions around the urethra and bladder, their liberation is always necessary, this is done almost automatically at the time of the exposure and the mobilization of the region of the sphincter. This operation may suffice but it must always be accompanied by colpoperineorrhaphy and, if necessary, by the other complementary operations of the uterovaginal prolapse. Depending on the nature of the case, some other intervention may be resorted to. The choice of the intervention depends necessarily on the habits and personal experiences of the surgeon, as is indicated by the great number of methods that have been recommended for the treatment of prolapse. It is essential that the surgeon recognize in each case the cause of the incontinence and select the operative method that is adapted to the pathogenesis of the disorder. There exist a variety and number of methods capable of producing cure in the majority of cases of this difficult and obstinate disorder.

Treatment of Vesicovaginal Fistulas—Andre shows that in the treatment of vesicovaginal fistulas it is necessary to consider the number, the dimensions and the site of the fistulas as well as the condition of the vaginal wall surrounding the fistula. He concludes that in the low obstetric fistulas it is best to operate by way of the vagina, dissecting the vagina from the bladder, with temporary cystostomy which intervention in case of failure can be repeated. In cases of high obstetric fistulas, the subpubic route is indicated, either at once or after failure of attempts by the vaginal route. In operative fistulas, the transvesical approach has produced numerous successes and has in its favor its harmlessness for which reason it has been employed by the majority of surgeons, according to the technic of Marion. It should be kept in mind however, that the transperitoneal vesical method of Legueu, although it involves risks, has produced a higher percentage of cures than all other methods. It has the advantage of making possible the detection and removal of intestinal adhesions to the bladder. In vesicocervico urethral fistulas the best results seem to have been obtained by the creation of an artificial canal by means of the trocar method of Marion, following total closure of the bladder and temporary cystostomy. This method produced better results than the flap procedures from the point of view of continence and of urinary functioning. In the large fistulas the procedures which employ the interposition of the neck of the uterus have found no imitators in France. In the irreparable fistulas or in those which resist several attempts with other procedures, colpocleisis is only a makeshift, for its inconveniences are well known. Finally, if for any reason whatever one must take recourse in diverting the urine away from its natural course the author prefers to the intestinal route of Coffey, which is grave in its immediate and late results the iliac cutaneous derivation of Papin, which is less dangerous and likely to result in a long survival. In the conclusion the

author points out that, thanks to the progress in obstetrics and operative gynecology, vesicovaginal fistulas are becoming more and more rare.

Presse Medicale, Paris

45 1259 1274 (Sept 4) 1937

Postoperative Peptic Ulcers or Relapsing Ulcers and Their Treatment \ Delore and H Gabrielle—p 1259

*Existence of Hematopoietic Hormone in Hypophysis J Flaks I Hummel and A Zlotnik—p 1261

Hematopoietic Hormone in Hypophysis—Flaks and his collaborators maintain that the hematopoietic function of the bone marrow is regulated by a hormone, although its character and origin have not been definitely established. Clinical and experimental observations indicate that the hypophysis exerts an influence on the hematopoietic function of the bone marrow, and the authors decided to investigate that problem also. They experimented on rats by injecting extracts of the anterior lobe of the hypophysis. In summarizing the experiments they state that 1 The prolonged oral administration of the anterior lobe of the hypophysis produces in rats an increase in the number of reticulocytes and consecutively an augmentation in the erythrocytes, so that the number of erythrocytes which is normal for this species of animals is considerably surpassed. There results a prolonged experimental polyglobulism. 2 The substance which irritates the bone marrow and provokes strong erythrocytosis is not found in the deproteinized fraction and it is thermostable. 3 This hormone acts directly on the bone marrow and is without influence on the thyroid. 4 The injection of a quantity of extract corresponding to 0.4 Gm of fresh hypophysis produces after twenty-four hours the transformation of gray marrow into red marrow. 5 On the basis of clinical observation and of the experiences described the authors conclude that the hypophysis has an important physiologic role in the regulation of erythropoiesis by means of a hematopoietic hormone which acts on the bone marrow.

Schweizerische medizinische Wochenschrift, Basel

67 809 848 (Aug 28) 1937 Partial Index

Treatment of Mercurial Intoxication by Hydrogen Sulfide (Stryzowski's Antidote) L Michaud—p 818

Aspects of Tendovalginal Xanthomatosis A Schüpbach and W Rudolf—p 820

*Disease of Adrenal Cortex as Cause of Disturbances in Resorption F Verzar—p 823

Aspects of Enzymatic Decomposition of Amino Acids S Edlbacher and A von Segesser—p 827

*Problem of Fulminating Purpura E Glanzmann—p 829

Acrodynia with Masked Onset P Gautier—p 830

Are There Transition Forms Between Dühring's Dermatitis Herpetiformis and Chronic Malignant Pemphigus? O Naegeli—p 831

The Adrenal Cortex and Disturbances in Resorption—Verzar cites experimental and clinical observations which prove that the adrenal cortex exerts an influence on intestinal resorption. He shows that the resorption from the intestine is essentially a process of diffusion. The question arose whether esterification ceases in the intestine as it does in the musculature when the adrenals are extirpated. It was demonstrated that removal of the adrenals arrests the selective resorption of certain sugars. That the abolition of the function of the adrenal cortex was the decisive factor was proved by the fact that the administration of adrenal cortex extract reestablished the selective resorption for certain types of sugars. It was demonstrated that fat resorption is greatly retarded in adrenalectomized animals and that animals without adrenals fail to grow because they are incapable of forming flavin phosphoric acid from lacto-flavin. When young adrenalectomized rats were given flavin phosphoric acid they continued to grow. The author further investigated whether in human subjects disturbances occur which must be regarded as primary disturbances in resorption and in which involvement of the adrenals is demonstrable or whether disturbances in the resorptive processes can be demonstrated in adrenal disorders. He was able to demonstrate that nontropical sprue and Gee-Herter's disease show the same inhibition in the resorptive function that is observed after abolition of the adrenocortical function. The literature reports cases of nontropical sprue that were diagnosed as Addison's disease, also cases in which sprue followed Addison's disease and vice versa. The author emphasizes that the otherwise inex-

plainable disturbances in resorption which develop in these disorders are the result of a hypofunction of the adrenal cortex. Regarding the action of adrenal cortex extract in disorders in which the primary resorption has been impaired, he says that in nontropical sprue and similar disorders the adrenal cortex extract has never been given in doses large enough to be comparable to those that were effective in animal experiments. However, yeast concentrates that contain flavin-phosphoric acid have been known to produce favorable results in nontropical sprue. Moreover, the author thinks that the lack in vitamins, which has been held responsible for sprue, is the result of a defective function of the adrenals, for adrenalectomy is followed by a secondary B. avitaminosis.

Fulminating Purpura—Glanzmann points out that the term purpura fulminans was applied by Henoch to cases in which hemorrhages from the mucous membranes were entirely absent but in which extensive ecchymoses developed with great rapidity. Within a few hours the ecchymoses colored entire extremities blue or blackish red and caused a rather firm hemorrhagic infiltration of the cutis. Moreover, serosanguineous blisters formed on the skin, but there never was gangrene. In some cases hardly twenty-four hours elapsed between the formation of the first ecchymoses and death. The longest duration was four days. Complications were absent and necropsy gave negative results, except for a generalized anemia. The etiology likewise remained obscure in Henoch's cases. One of the cases developed after a pneumonia and another one after a mild scarlet fever, whereas in all others the etiology was entirely obscure. After reviewing several other cases of fulminating purpura that were reported in the literature, the author gives a detailed description of a case that he observed in which a nursing, aged 6½ months, recovered. In 1916 the author suggested that the fulminating purpura of Henoch represents the severest form of anaphylactoid purpura. The bilateral, symmetrical arrangement of the ecchymoses recalls similar conditions in Schonlein-Henoch's purpura. In the reported case, successive crops appeared in which, in addition to the blood spots, red papules with urticarial aspects developed and also pale, inflammatory edemas. The condition of the blood of the nursing corresponded with that observed in anaphylactoid purpura. For the treatment the author recommends blood transfusions or, still better, intramuscular blood and serum injections, to effect desensitization. In this case the treatment with calcium gluconate and cevitic acid resulted in rapid cessation and paling of the extensive cutaneous hemorrhages. However, the favorable effect of the cevitic acid should not be regarded as indicative of a scorbutic genesis of the cutaneous hemorrhages. The vitamin C merely supports the calcium action by making the vessels less permeable. It is pointed out that recent studies have disclosed that vitamin C inhibits or reduces anaphylactic shock and serum disease.

Archivio di Radiologia, Naples

13 1175 (Jan April) 1937

Roentgen Stratigraphy Theoretical Bases and Practical Applications

P. Livraga—p. 5

*Short (Marconi) Waves in Treatment of Chronic Sinusitis F. Talia—p. 23

Roentgen Treatment of Subacute Inguinal Lymphogranulomatosis C. Guarini—p. 32

Treatment of Cancer by Roentgen Irradiations at Short Focal Distance C. Guarini—p. 41

Short Waves in Chronic Sinusitis—Talia reports satisfactory results from the treatment of nasal or paranasal sinuses by short waves in chronic sinusitis. He used waves 7 or 8 meters long and Schliephake electrodes of the condensing type in eight patients suffering from chronic maxillary, frontal or sphenoidal sinusitis. In chronic unilateral maxillary sinusitis the electrodes are placed over the sinus which is involved by the pathologic process and on the contralateral occipital region. In chronic bilateral maxillary sinusitis the electrodes are symmetrically placed over each sinus. They should entirely cover the sinus. In frontal and sphenoidal sinusitis the classic occipitofrontal and bitemporal techniques, respectively, are indicated. When various sinuses are involved the treatment is given alternately to the different sinuses. The treatments are given daily or every other day, up to thirty or forty during two or four months. Each treatment lasts for fifteen minutes

during the first month or two months and for thirty minutes (and rarely for forty minutes) during the last month or two months. The treatment is discontinued for ten days at five intervals. According to the author the treatment is of value especially in chronic sinusitis of short duration. Maxillary sinusitis, especially of the inflammatory and suppurative form, responds to the treatment better than other forms of chronic sinusitis. Suppuration is replaced by a serous discharge which completely disappears shortly in the course of the treatment. Fever, headache, local pain to pressure and local congestion promptly disappear. In some cases there is a transient slight aggravation of the symptoms early in the course of the treatment. The patients who do not respond favorably to the short wave treatment do not improve under medical treatment either and therefore should be subjected to surgery. The author advises cooperation between specialists in otorhinolaryngology and dentists, as the presence of caries or other dental diseases may maintain inflammation of the sinuses. When the x-ray examination of the sinus shows destruction of the bony walls together with inflammation, surgical intervention is indicated. The results obtained in the author's cases were verified by x-ray examination of the sinuses some time after completion of the treatment.

Arch p 1 Stud d Fisiopat e Clin d Ric, Siena

5 247 332 (July Aug) 1937

*Influence of Cevitic Acid on Metabolism of Uric Acid M. Pescarmona and F. Quaglia—p. 247

Functional Efficiency of Liver in Various Stages of Malaria A. M. and L. Pinelli—p. 267

Gas (Oxygen and Carbon Dioxide) of Blood in Heart Diseases L. Benacchio—p. 293

Hemoglobin in Regulating Chemical System of Reactions of Blood Experimental Acidosis and Hematopoietic Reactions L. Antognetti—p. 305

Influence of Cevitic Acid on Metabolism of Uric Acid—Pescarmona and Quaglia studied the influence of cevitic acid on the metabolism of uric acid and urea in four normal persons, six patients presenting hyperuricemia and five with hypo-uricemia. All were given a constant diet which contained a specified amount of purine substances. Quantitative determinations of the uric acid in the blood of the patients with a fasting stomach were made for seven or nine consecutive days. The last four or five days they were repeated one half, one two and three hours after administration of an intravenous injection of 150 mg of cevitic acid. Determination of uric acid in the blood was made as soon as possible after withdrawal of the latter in order to prevent alterations in the blood. The amount of uric acid and of uric acid eliminated through it was determined in the twenty-four hour urine. The uric acid in the blood and in the urine was determined by the Benedict colorimetric and the Folin-Shaffer methods, respectively. Urea in the urine was determined by Segre's sodium hypobromite method. The authors found that the amount of uric acid in the blood increased in the majority of the cases both during the three hours immediately following administration of the cevitic acid and during the whole time of treatment. The increase is real. It is not due to the amount of cevitic acid in the plasma after the injections. Diuresis is increased in the majority of the cases. The daily elimination of uric acid and urea in the urine increased in all cases. According to the authors, the increase of uric acid in the blood and in the urine as well as that of urea in the urine is due to an indirect stimulation of the uric acid and urea metabolism by cevitic acid. Probably the latter stimulates the sympathetic nervous system and the production of ferments which activate the metabolism of purines as well as of urea.

Munchener medizinische Wochenschrift, Munich

84 1361 1400 (Aug 27) 1937 Partial Index

Etiology of Harvest Fever in Danube Region of Lower Bavaria W. Rimpau—p. 1361

Zone of Transformation in Scapula During Rickets H. Kellner—p. 1362

*Objective Method for Determination of Onset and Duration of Coagulation H. Festen—p. 1370

So-Called Utilizing Arthritis J. Schuller—p. 1381

Determination of Onset and Duration of Coagulation—In his studies of thrombosis, Festen needed a method that would determine not only the onset of the coagulation of the blood but also the time of its completion. Moreover he had a method

at finding a test for which a few drops of blood would suffice. Attempts were made with the determination of the electrical resistance before and after coagulation. Differences in the conduction capacity of the blood for electric current were actually determined, but, in view of the disadvantages of this method, it was abandoned. One of the disadvantages was that the electric current influenced the speed of coagulation. A report by Wolvius gave the author a new idea. Wolvius attempted to determine the coagulation time by means of the thermo electrical effect, when the blood coagulates, it becomes less permeable for heat rays, which can be determined by means of the extincitrometer of Moll. However, the Wolvius method could be used only on the blood plasma, not on the whole blood, and for this reason it was necessary to subject the blood to interventions, such as centrifugation, which would influence the coagulation time. It occurred to the author to use the photo cell, because it permits the measurement of weaker rays than do the thermic methods. He puts two drops of blood, which have been mixed with one drop of distilled water, on a hollow slide and places it directly in front of the photo cell. By means of micro-ammeter, it is possible to determine after four or five minutes that the photo cell receives less light, this reduction in light is at first considerable, after a few minutes it becomes less, but after from thirteen to sixteen minutes the light again becomes uniform. By recording the position of the ammeter at half minute intervals, a curve is obtained which indicates the changes in the light permeability of the blood during coagulation. That this change in the permeability for light is the result of coagulation is proved by the absence of changes in the permeability for light when instead of the drop of distilled water one of sodium citrate is added. In order to make the method even more objective, the movement of the needle was registered by photography. An advantage of the method is that the blood is not touched during the process of coagulation.

Zeitschrift für klinische Medizin, Berlin

132 423 576 (Aug 6) 1937 Partial Index

- Loss of Vitamin A and Secondary Hypovitaminoses E Schneider and H Weigand—p 423
Biology of Vitamin C E Tonutti—p 443
*Unusual Forms of Polycythemia Vera K A Seggel—p 466
*U Wave in Human Electrocardiogram K Blumberger—p 478
Clinical Electrocardiography Dependence of Type of Electrocardiogram on Body Structure G Schlomka and R Rodewald—p 494
Effect of Autogenous Substances with Circulatory Action on Rapidity of After Circulation in Capillaries H Verfurth—p 514
*Hepatic Involvement in Exophthalmic Goiter Leonore Retzlaff—p 527

Unusual Forms of Polycythemia Vera—Seggel states that of twenty-eight cases of true or idiopathic polycythemia that came up for observation at the medical clinic of the university of Leipzig there were only a few that were of the Vaquez or Gaisbock type. A case which is described in detail induced him to watch for a tendency to thrombosis and to hepatic disturbances in cases of polycythemia vera. Reviewing the literature, he found that hepatic cirrhoses may concur with a simultaneous increase in erythrocytes in the circulating blood. Some of these cases were regarded as secondary polyglobulism, others as a combination of polycythemia and hepatic cirrhosis. Such combinations may exhibit symptoms like the described case. Thromboses in the region of the portal vein are occasionally observed in patients with polycythemia. Moreover, such thromboses have been observed also in cases in which there is hepatic cirrhosis. The author thinks that these thromboses are most likely the result of the well known tendency to thrombosis, which exists during polycythemia. The opinion formerly often expressed namely, that thromboses in the region of the splenic vein may be the cause of polycythemia, has been abandoned. A thrombosis in the region of the portal vein may be without clinical symptoms, or it may become manifest by ascites and by the development of a collateral circulation but if it develops suddenly and extensively and produces intestinal infarcts it may result in death. Ascites develops in polycythemia either in case of a simultaneous cirrhosis of the liver or in the presence of thrombosis of the portal vein or without such thromboses in the presence of disturbances in the hepatic circulation. Such circulatory disturbances in the liver are the

chief cause of ascites in cases of thrombosis in the region of the portal vein. Icterus is often found in those cases of polycythemia in which there is also ascites, the icterus is likewise usually the result of a hepatic circulatory disturbance.

U Wave in Human Electrocardiogram—Blumberger directs attention to the fact that in the human electrocardiogram the T wave is occasionally followed either by a flat or a steep deflection, which was observed by Einthoven and was designated by him as U wave. So far it has not been determined whether this U wave is of cardiac or of extracardiac origin (perhaps elicited by the large vessels). In electrocardiographic tests on 240 patients, the author discovered the U wave twelve times (5 per cent). It may be present in all leads from the extremities and in the thoracic lead, or only in one or some of the leads. It may be absent in the electrocardiogram that is taken during rest and present in the one that is taken after exertion. It is usually more noticeable in the latter. Treatment with strophanthin or the presence of myocarditis does not influence an existing U wave. The size of the U wave is independent of the T wave. The U wave may enter into the P or T waves and thus may simulate intra-auricular conduction disturbances or changes in the T wave. It may prove difficult to differentiate the U wave from the electrocardiographic signs of auricular flutter. In the author's material a comparatively large number of the patients with U wave had myocardial disorders and high blood pressure.

Hepatic Involvement in Exophthalmic Goiter—Retzlaff reviews the literature and describes five cases that were observed at the university clinic in Königsberg. Although the literature indicates that a knowledge of a toxic impairment of the liver is based chiefly on pathologic anatomic studies, the cases reported here indicate that in all of them the signs of hepatic impairment were already demonstrable during life. Icterus the most typical symptom, and an increase in the bilirubin content of the blood were present in three cases. The fact that in two of these three cases the condition improved again indicates that the icterus which develops during exophthalmic goiter does not have the unfavorable prognosis (fatal outcome) that has generally been ascribed to it. On the basis of clinical studies and necropsies the conclusion is reached that parenchymal and functional disturbances of the liver are not a rarity in patients with exophthalmic goiter but that they can be observed occasionally, especially in the severe forms of exophthalmic goiter.

Wiener klinische Wochenschrift, Vienna

50 1243 1266 (Sept 3) 1937

- Distribution Elimination and Cumulation of Digitalis Glucosides L Lendle—p 1243
Aspects of Paraffin Lung F Brenner and F F Urban—p 1248
Auscultation of Joints O Eisenschimmel Eisen—p 1251
Acardius Acephalus Its Significance for Knowledge on Development and Cancer Research J Lartschneider—p 1254
Vaccine Therapy of Whooping Cough R Jarisch—p 1256
*New Treatment of Urticaria and Quincke's Edema G Wolpe—p 1257

New Treatment of Urticaria and Quincke's Edema—Wolpe evaluates the customary treatments of urticaria and Quincke's edema, suggests that the two conditions might be related and directs attention to the difficulty in keeping all allergic substances away from sensitive patients as well as to the difficulties involved in specific desensitization. He made efforts to find a substance by which the cutis and subcutis (the system especially involved in urticaria and Quincke's edema) could be desensitized not only against the substance itself but also against other urticariogenic substances. He reports the history of a woman, aged 40, who was subject to urticaria and who, after having been stung by a bee, developed a severe anaphylactoid urticaria which spread over the entire body. The urticaria responded to the intravenous administration of calcium. However to free the woman from the predisposition to urticaria, the author tried desensitization with a bee venom preparation. Although it was feared that a new anaphylactoid urticarial attack might be elicited by the preparation, this was not the case and the desensitization was successful in that, although formerly the woman had had urticarial attacks every six or eight weeks during the five years following the desensitization,

during which the patient remained under the author's control, she remained free from urticarial attacks in spite of the fact that her food was not restricted and that she was occasionally stung by bees or wasps. Encouraged by this success, the author tried desensitization with bee venom in twenty-five other patients with urticaria. Of these, fifteen remained entirely free from attacks thereafter, in six the attacks became less frequent and milder, and the four others could not be found for further control. After having used the bee venom desensitization for a year successfully in urticaria, the author decided to try it also in Quincke's edema. He describes the history of a man in whom the intravenous bee venom therapy not only cured the existing attack but prevented relapses of the allergic disorder. In the subsequent four years the author treated successfully five other cases of Quincke's edema by means of bee venom therapy. He suggests that the capacity to effect an organ specific desensitization probably is not restricted to bee venom preparations, but that this effect might be elicitable also with other cutaneously active, urticariogenic substances.

Polska Gazeta Lekarska, Lwów

16 699 718 (Sept. 12) 1937

Subphrenic Abscess A Stadnicki—p. 699

*Insatiable Pneumothorax A S Tenenbaum—p. 704

Diphtheria Picture of Rhinitis and of Laryngitis Caused by Pneumococci I Gopenhajm—p. 707

Inflammation of Appendix in Inguinal Hernia Z Binder and J Wolf—p. 708

Insatiable Pneumothorax—Tenenbaum recommends Forlani's method for pneumothorax, which requires in the physician not only skill but the utmost concentration to avoid complications, one of which is insatiable pneumothorax in which the injected air unaccountably disappears. Among twenty-five such patients it was noted that the pleural exudation did not amount to more than 4 per cent, while the ordinary pneumothorax patients reached an exudation of from 50 to 100 per cent. Insatiable pneumothorax is rare and can be diagnosed only after exclusion of partial ordinary pneumothorax. It is observed not only in incipient tuberculosis but also in rather severe cases. To change it into ordinary pneumothorax, air must be pumped in repeatedly and atropine must be administered. The mechanism of appearance of insatiable pneumothorax is still unknown and the diagnosis remains an open question. He classifies insatiable pneumothorax into three groups: (1) early (primary) and late (secondary), (2) genuine and spurious, which is divided into the masked and partial forms, and (3) that in which mistakes have been made in the administration of pneumothorax: penetration of the lung by the needle and subpleural injection of air.

Vestnik Khirurgii, Leningrad

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Five Years of Organization of Donors by the Leningrad Blood Transfusion Institute L G Bogomolova—p. 163

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Heterogenous Blood Transfusion in Gastro-Intestinal Diseases—Ryss reports a follow-up study of 190 cases of ulcerative disease of the stomach in which heterogenous blood transfusions were given, and of 120 cases in which treatment was administered by transfusions of homogenous blood. The cases were followed for four years. In the patients treated by the transfusion of heterogenous blood the immediate results were excellent in 76 per cent, satisfactory in 17.5 per cent and without any effect in 6.5 per cent. However, 70 per cent of the patients exhibited recurrences in from six to eighteen months after the termination of the treatment and the disappearance of clinical signs. Immediately after transfusion of either

homogenous or heterogenous blood, a marked lowering of the alkali reserve was noted the stronger the reaction, the more marked the lowering. This effect corresponds to similar observations made in anaphylactic shock by other authors. The alkali reserve toward the end of the treatment increased once more from 19 to 13.9 with homogenous blood and from 0.6 to 24.5 with heterogenous blood transfusion. The increase in alkali reserve always coincided with improvement in the clinical signs and for that reason may be regarded as a positive index of the therapeutic action of blood transfusion. The basal metabolism rose sharply following the transfusion. After each blood transfusion it fell somewhat in the course of the treatment, so that at the end of the treatment it was higher by from two to thirteen points than it was at the beginning. The author considers the rise in the basal metabolism toward the end of the treatment as an index of an increase in the intensity of the biochemical and immunobiologic activity of the cells of the organism. Because of recurrences, the author is forced to the conclusion that the heterogenous and homogenous blood transfusion therapy in ulcerative disease is just as ineffective as the other methods of treatment. The therapy is to be recommended in protracted forms of ulcerative disease in which dietetic treatment does not accomplish anything. In the bleeding type of an ulcer, transfusion of homogenous blood is the most effective, in fact, the best treatment, and is absolutely indicated. The experience with blood transfusion therapy in sixty cases of colitis demonstrated that the method is frequently quite successful, particularly in cases of chronic dysentery and amebic colitis, in which vaccines, emetine and other specific remedies fail to produce an effect.

Transfusion of Conserved Blood—Filatov points out the following advantages of the method: 1 Its availability in emergency and the saving of time should make it of particular value in military surgery. 2 Conserved blood can be transported to distant localities. The Leningrad Central Institute for Blood Transfusion has transported blood in airplanes in 130 instances, the blood being delivered by parachutes. 3 Transfusion of conserved blood is limited to one act, namely, that of transfusion. It calls for less skill than the taking of the blood from the donor. One must, however, guard against overheating the blood, for transfusion of such blood is dangerous. 4 The method of using conserved blood is responsible for the increase in sources of the blood. Thus it made possible the utilization of placental and of cadaver blood, as well as transfusion of plasma. 5 The method allows of greater flexibility in dosage. One may resort to massive transfusions as well as to small ones, as the case may indicate. The institute keeps on hand blood in amounts of 300, 200, 100, 20 and 10 cc, the small doses being for hemotherapy in pediatric practice. The most serious shortcoming of the method is to be seen in the definite lowering of the biologic properties of the conserved blood. The time limit accepted by the institute for the preservation of the blood is ten days. This limit may be extended to fifteen days in exceptional cases and when the blood is not to be transported. Another disadvantage is to be seen in the fact that a certain number of samples of the blood will spoil and will have to be discarded thus increasing the cost of transfusion. Finally, the author states that the transfusion of conserved blood is associated with more complications than the transfusion of fresh blood. He concludes that the method is now past its experimental stage and that it deserves a wider application.

Hospitalstidende, Copenhagen

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*Pathogenesis of Renal Glycosuria C. J. Munch Petersen—p. 883

Remarks on Pathogenesis of Nasal Lupus H. Videbeck—p. 891

Renal Glycosuria—In the opinion of Munch Petersen, the hypothesis of cerebral origin of renal glycosuria is supported by the fact that renal glycosuria is most often combined with an increased dextrose content in the spinal fluid and that the sugar content of the spinal fluid in renal glycosuria reacts in a manner characteristic of dysfunction of the subthalamus region. Further, in most of the cases of renal glycosuria examined by him there were organic disorders in the central nervous system.

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LOCAL OVERGROWTH

CHAIRMAN'S ADDRESS

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CHICAGO

During the past decade orthopedic surgeons have evidenced a mounting interest in the problem of the short extremity in its relation to the functional economy of the body. From every side come studies relating to the causative factors as well as proposals of corrective measures designed to reestablish or equalize the length of the extremities. The ultimate goal of these procedures is the conservation of effort and work on the part of the body. Defective growth due to (1) deficiency of germ plasma, (2) circulatory failures occurring early in embryonic life or (3) epiphyseal disturbances resulting from some obscure endocrine failure disease trauma or dyscrasia is encountered in the everyday practice of orthopedic surgery.

The bilateral manifestation of arrested growth arouses our deepest and most sympathetic consideration and spurs us on to experiment in fields of medicine which are still somewhat nebulous to most orthopedic surgeons, e. g. endocrinology and vitamin therapy. Surgical procedures are rarely advocated for the relief of bilateral symmetrical arrest of growth, for the pitfalls are many and the results seldom justify the means.

In dealing with unilateral arrest of growth and the accompanying disturbances of posture and function, the orthopedic surgeon, especially, has been inspired to employ an endless variety of mechanical and surgical measures in reaching a physiokinematic as well as a cosmetic solution for his patient. These measures extend from the use of artificial appliances originating in antiquity to the more modern and direct surgical procedures of leg lengthening and growth stimulation in all its phases, as well as the contralateral shortening and epiphyseal arrest of the normal extremity. The success of leg lengthening has been demonstrated frequently its failures and untoward results less often. Growth stimulation appeals to us, although the perfect stimulus remains to be discovered. Shortening of the well leg is successful beyond doubt. Epiphyseal arrest of the longer extremity by surgical measures is most effective and less hazardous and is gaining rapidly in its field of usefulness.

Because the skeleton is the most concrete and permanent register of disturbances in growth the orthopedic surgeon is placed in a position to observe the life story of his patient as he views the progress of skeletal development clinically and roentgenologically.

The counterpart of arrested growth is overgrowth, and it is to this subject that attention is here directed. Here again, the orthopedic surgeon's opportunity is unique, for the skeletal register runs true to form. The same problem of conservation of energy is present, and the corrective measures at the disposal of the orthopedic surgeon are similar to those used in dealing with arrested growth. That overgrowth may follow trauma to growing bone is not an uncommon observation. So frequently does such overgrowth occur that the orthopedic surgeon makes inquiry into this factor whenever inequality in the length of the extremities is encountered. The spontaneous self lengthening of overriding fractures at times compensates for what might otherwise appear as gross inefficiency of treatment. This is especially so in the lower extremity. The factors causing overgrowth although somewhat obscure are related to the growth response at the site of fracture and probably, more directly, to compensatory vascular engorgement near the active epiphyses. Epiphyseal stimulation following osteotomy was observed by Goldthwaite and more recently by Fergusson. The outcome of these observations is the development of epiphyseal stimulation by the production of pseudo-fractures near the epiphyses. Foreign material and chemical irritants have been employed to the same end. That growth stimulation may follow the removal of a cortical graft is obvious (fig 1), but is often not observed in view of the overshadowing pathologic change for which the graft is taken. The possibility of overgrowth of the tibia might be of help in the selection of the extremity from which the graft is to be moved.

Infections of the shaft of growing bone stimulate growth at the epiphyses provided the function of these centers of growth is not impaired. The localized overgrowth in osteomyelitis or in the more limited Brodie abscess may be such as to result in gross inequality of limb and its complications.

Infections of joints if not widely destructive stimulate epiphyses to greater activity first, in the lengthening of the diaphysis and, second, by increased osteogenesis in the subchondral area of the epiphysis itself. Low grade rheumatoid arthritis of the wrist of a small child will result in ossification of the carpal bones more advanced than that of the uninvolved member. The patella responds in a similar manner. This epiphyseal response may occasionally be seen in tuberculous joints. It is absent of course in the case of virulent destructive lesions of joints.

Carey and others have shown that bone grows in response to elements of traction or compression and that the contour and architecture of osseous bodies reflect to a great degree external forces. The angle formed by the shaft and the neck of the femur is a composite of growth reaction in response to the tension

and traction of the hip muscles and the compression force of weight bearing occurring throughout the normal arcs of function. Should the arc of function be restricted, alteration in the angle of the femoral

such as hemihypertrophy, polydactyly and some form of macrodactyly. Each case of this kind presents a problem taxing the resourcefulness of the surgeon in charge (figs 3, 4 and 5).

Streeter has shown that differentiation of the limb bud may be distorted or arrested by local arrest of the embryonic circulation. The association of local over-

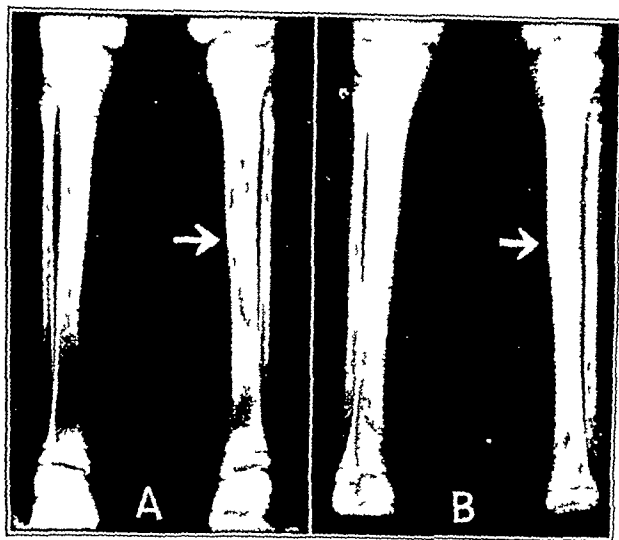


Fig 1—A cortical graft removed from the left tibia. B 2 cm overgrowth in length sixteen months after removal of the graft.

neck may be anticipated. I have observed the development of coxa valga in cases of prolonged immobilization of the knee joint by cast or, more recently following operative ankylosis (fig 2). In such cases the functional arc is reduced considerably and the resulting coxa valga increases the length of the leg. This is especially so when the stimulus of weight bearing is not interrupted over long periods. Such a process may be considered as one phase of local overgrowth in a somewhat restricted sense. In cases of fusion of the ankle for tuberculosis in children, stimulation of tibial growth has been observed when the plaster dressing was applied in such a way as to increase longitudinal compression strains, that is with the knee flexed at right angles.

From this brief and possibly sketchy review of some of the acquired factors resulting in local overgrowth, I shall turn to a short consideration of developmental factors which lead to the same result.

Bagg and Little have demonstrated that injury to the germ plasma of an early embryo may result in a great variety of congenital deformities and that the incidence of deformities in succeeding generations



Fig 2—Coxa valga on the right side three years after surgical fusion of the knee for tuberculosis.

remains high. Their observations were on chick embryos which had been exposed to the roentgen ray. Local overgrowth due to defective germ plasma may be manifest by an unending variety of deformities



Fig 3—Overgrowth of the toes, no associated vascular anomaly.



Fig 4—The feet shown in figure 3 after surgical intervention.

growth of tissue with maldevelopment of the vascular system has been emphasized by many writers. Keith described the origin of these systems as follows:

Within the body of the embryo mesenchymal cells assemble in vasoformative groups, becoming canaliculated they unite with neighboring groups to form arteries and veins. The endothelial

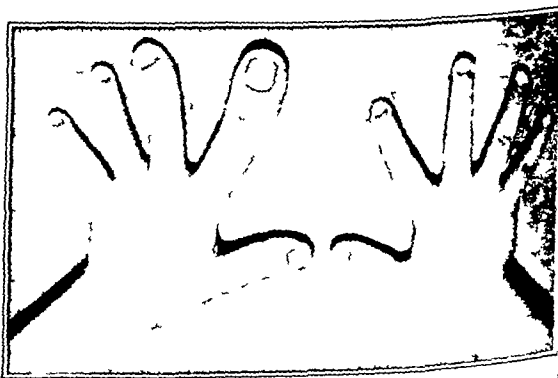


Fig 5—Overgrowth of the thumb and the index and middle fingers of the left hand.

cells of capillaries retain throughout life the vasoformative power which characterizes them during the period of development and growth. The formation of lymph vessels begins at definite centers from which vessels spread outward, vascularize and drain a definite area. Hemangioblasts are everywhere at the fourth week have vascularized all embryonic tissue. The lymphangioblasts, however, do not vascularize tissue until the sixth to eighth week or later, at first forming lymph sacs which are temporary structures but which eventually

ally open into the jugular vein or the thoracic ducts. The lymphatic system is a closed system, its walls being lined with endothelium. No communication with tissue spaces exists.

Alterations in the rate of growth may be due to the increased circulation of intercellular fluid or possibly to the increased temperatures which are found. Inter-

cular nevus formation. My observations of cutaneous temperature in areas of nevus show that an elevation of 2 degrees C (36 F) above the temperature of adjacent normal skin is not uncommon (fig 8). Under

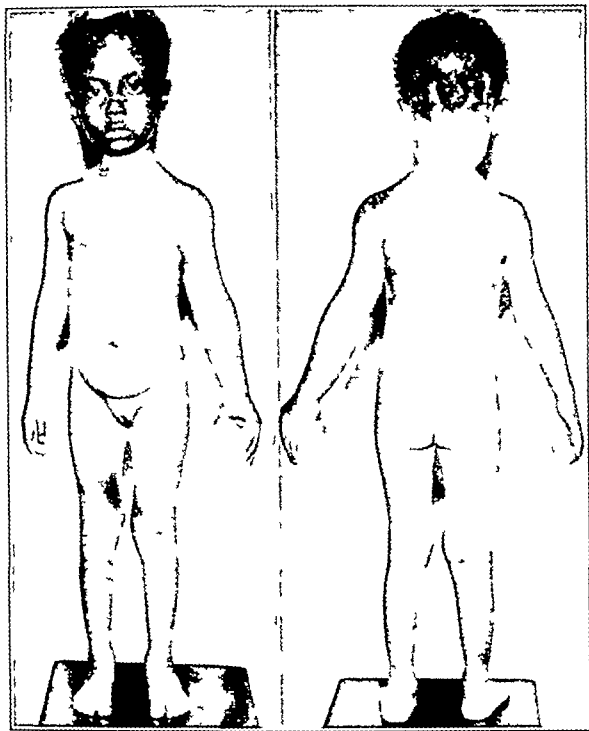


Fig 6—Overgrowth of the left arm with congenital deformity of the hand associated with anomaly of the base of the heart

communications between the larger vessels (arteriovenous fistulas) result in a distinct elevation of the oxygen tension of the blood, especially in the venous system.



Fig 7—Enlargement of the base of the heart on the left side (see fig 6)

shows an overgrowth of all elements, and the surface of the skin shows a distinct elevation of temperature. The venous pressure is increased and compensatory hypertrophy of the heart results. A similar short circuiting of arterial flow may occur as a result of dilatation of the capillary bed in extensive vas-

cular nevus formation. My observations of cutaneous temperature in areas of nevus show that an elevation of 2 degrees C (36 F) above the temperature of adjacent normal skin is not uncommon (fig 8). Under these conditions growth is excessive. The faulty development of the vascular tree points to some factor active in the fourth week of embryonic life. When this factor continues over a longer period or develops somewhat later in embryonic life, distortion of the lymphatic system may complicate the picture. Arteriovenous

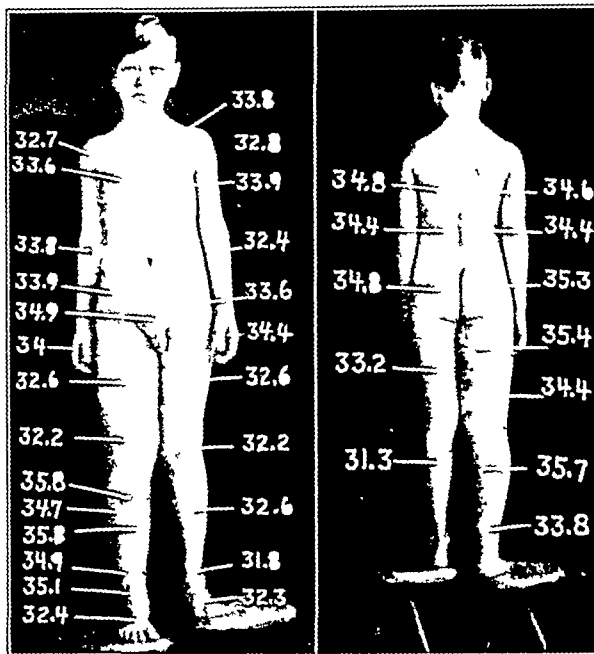


Fig 8—Overgrowth of the right leg, with extensive nevus formation. The figures give the cutaneous temperature in degrees centigrade

these conditions growth is excessive. The faulty development of the vascular tree points to some factor active in the fourth week of embryonic life. When this factor continues over a longer period or develops somewhat later in embryonic life, distortion of the lymphatic system may complicate the picture. Arteriovenous

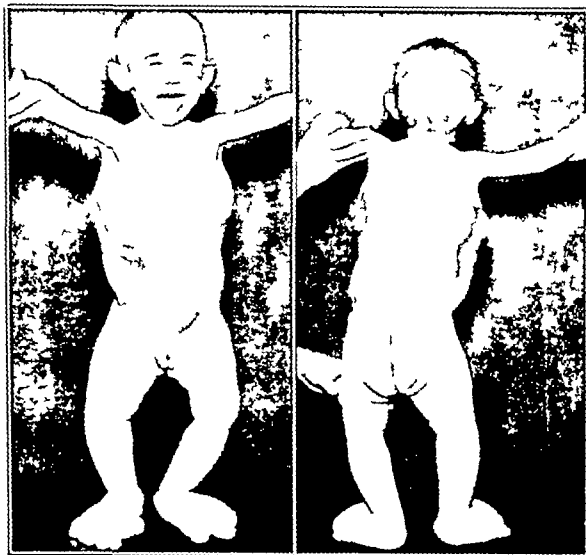


Fig 9—Overgrowth of the feet and legs associated with nevus, lymphangionia and hemangioma. Congenital dislocation of both hips is present in this case

fistulas, vascular nevi, hemangioma and lymphangioma may be present in the same person and serve as the basic factors in causing overgrowth of the extremity (fig 9). Some of these factors undoubtedly are

involved in the production of the clinical picture described by Milroy

Lymphatic obstruction by parasites may also cause overgrowth of the involved extremity, provided of course that infection occurs in the period of growth



Fig. 10—Overgrowth of the entire spine etiological factors unknown

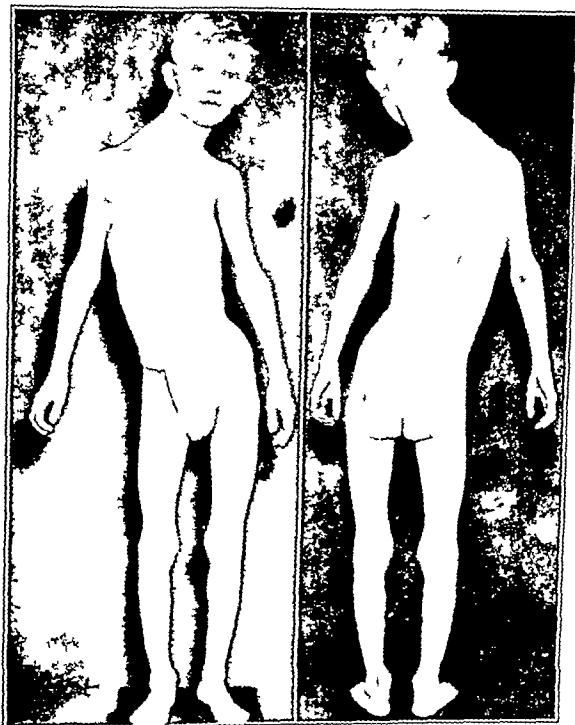


Fig. 11—The patient shown in figure 10 four years later. Corrective measures could not be continued because of massive collapse of the lung on three occasions

Endocrine disturbances may be somewhat selective in their effect on different portions of the skeleton but in general local overgrowth is uncommon (figs. 10

and 11). Growth hormones, however, do have a selective effect, as evidenced by the varying rate of growth of skeletal tissue. The continuing growth of the spine after the slowing of the growth of the extremities at puberty points to a selective growth action or to a more complex and varying composition of the growth hormone itself. Imbalance of the normal response of skeletal tissues to this stimulus may result in local overgrowth.

The parade of deformities passing before the orthopedic surgeon cannot but arouse his curiosity as to the etiologic factors at work. His high development of surgical technique along mechanical lines too often leave him barren of the deep principles familiar to the physiologist. To do justice to his calling, the orthopedic surgeon must think more along physiologic lines. This is one of the guide posts to greater usefulness. Let him heed it.

6 North Michigan Avenue

THE MANAGEMENT OF PULSION ESOPHAGEAL DIVERTICULUM

BASED ON AN OPERATIVE EXPERIENCE WITH EIGHTY-TWO CASES AND A FOLLOW UP STUDY OF FIFTY-THREE CASES

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Having operated on eight-two patients for esophageal diverticulum of the pulsion type, having had a number of intrapleural esophageal diverticula of the traction type to deal with by nonoperative measures and having, successfully operated on a large intrapleural supradiaphragmatic type of diverticulum, I thought it possible that a presentation of some of the knowledge obtained in these experiences would prove of interest and of value.

Pulsion diverticula far outnumber all other types of esophageal diverticula according to my experience, and occur as small (fig. 1) intermediate (fig. 2) and large (fig. 3) diverticula always located, since they are the result of a bulging of esophageal mucosa through a congenital muscular defect at this point, at the oesophagopharyngeal level.

Traction diverticula (fig. 4) are most commonly situated within the pleura and at or near the level of the main pulmonary bronchi, since they are associated with inflammatory processes in the bronchial lymph glands located at this level.

Supradiaphragmatic intrapleural esophageal diverticula probably start as the result of a congenitally weak area in the esophageal wall and develop further into large sacs, as shown in figure 5 because of the accumulation of food within the sac and an intrasac pressure which is greater than the resistance of the wall of the sac.

This discussion is concerned for the most part with esophageal diverticulum of the pulsion type. Since little except dilation need be done for patients with the traction type of diverticulum, and since the intrapleural supradiaphragmatic type of esophageal diverticulum is so much less common than the pulsion type, discussion of these two types will be left for another paper. Figure 6 shows the operative procedure by which

large intrapleural supradiaphragmatic diverticulum was successfully managed and figure 7 the results of the operation

A pharyngo-esophageal diverticulum is a protrusion of the mucosa and submucosa of the hypopharynx through the muscular wall of the hypopharynx. The sac lies between the pretracheal and prevertebral fascia, and its neck is surrounded by fibers of the inferior constrictor muscle and the muscle which splits off from it obliquely to extend down the esophagus, the cricopharyngeus muscle. This muscle's relationship to the neck of the sac is of the utmost importance since unless the constricting muscle fibers about the neck of the sac are accurately removed the sac is quite apt to recur.

The symptomatology of pulsion esophageal diverticulum is, as would be expected related to accumulation of food within the sac and related to obstruction to the passage of food into the esophagus beyond the sac. Dr. Walter B. Hoover of the otolaryngological section, in reviewing the histories of fifty-three patients operated on in two years in the Lahey Clinic found the symptoms to be in order of frequency difficulty

When my co-workers and I at the Lahey Clinic first began to operate on patients with esophageal diverticulum, many of the patients came with a very large diverticular sac and were therefore unable to get food past the sac into the stomach. In spite of the fact that the practical absence of mortality¹ now attracts patients to earlier operation patients still appear with large sacs (fig. 3) and symptoms of obstruction. While persons who deal with diverticula regularly are entirely familiar with the mechanism of this obstruction, many are unfamiliar with the causes and so unaware of the danger in the presence of these sacs in the use of the bougie and in any procedure but the most careful esophagoscopy.

Figure 8 (A, B and C) shows better than can any descriptive words how the downward traction of the sac on its neck brings the opening into the sac into a transverse position and converts the true opening into the esophagus into a lateral position and how downward traction made by the food-filled sac brings the two lips of the true opening into the esophagus together so that in patients with a large diverticulum this opening is converted into a mere lateral slit. In some cases



Fig. 1—A small esophageal pulsion diverticulum

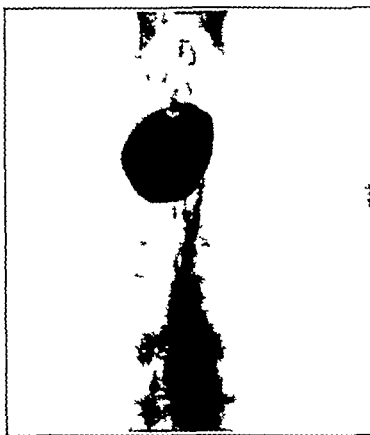


Fig. 2—A medium sized esophageal pulsion diverticulum

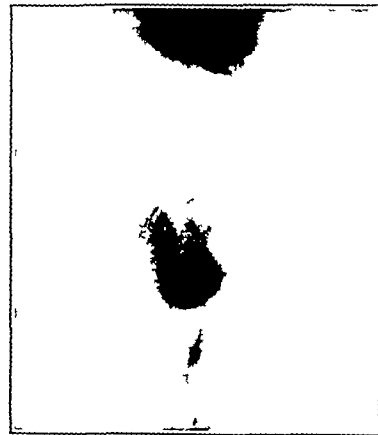


Fig. 3—A moderately large esophageal pulsion diverticulum

in swallowing, regurgitation gurgling noises in the neck, choking attacks of strangling or coughing and loss of weight.

Little need be said regarding most of these symptoms. Some points about two or three, however, do need discussion. It is of interest that forty of the fifty-three patients observed by Dr. Hoover had gurgling noises in their throats on swallowing due to the mixture of air with the food in the sac and that these unpleasant noises stimulated so much curiosity on the part of their companions that the patients found it embarrassing.

Attacks of coughing, choking or strangling occurred in twenty-eight of the fifty-three patients. They occurred particularly when the patients were lying down, and several patients complained that they were frequently awakened at night by choking attacks. The attacks undoubtedly occurred when the contents of the sac spilled over into the lumen. Two patients with pulsion esophageal diverticulum had pulmonary abscess from aspiration of the contents of the diverticular sac while sleeping and required drainage of the abscess before the diverticulum could be operated on. Several patients have sought operative relief because of choking attacks and the danger of a pulmonary abscess due to aspiration must always be appreciated in such cases.

It is difficult if not impossible to find the opening and pass a tube into the stomach for preliminary feeding purposes, even after careful search for the opening through the esophagoscope.

In two cases in which we operated for this type of diverticulum the sac had been perforated before the patient came to us, in one case by a bougie and in the other by an esophagoscope. In the two cases nearly fatal mediastinitis resulted, requiring prolonged mediastinal drainage and in one case a temporary gastrostomy. A realization of the altered relationship between the opening into the diverticulum and the opening into the true esophagus will protect any one against a repetition of such perforation.

The successful operative treatment of esophageal pulsion diverticulum involves the complete removal of the sac and its neck, the complete removal of the constrictor muscle fibers from about the neck of the sac and the protection of the patient from the development of cellulitis between the prevertebral and pretracheal fascia and extension of this infection into the

1 There has been but one death in the eighty-two cases in which operation was done and that was in a man of 85 who had a diverticular sac in his mediastinum the size of a small grapefruit. Death was not related to the diverticulum itself but was due to uremia. He would not have died however had he not been operated on and the death is properly attributed to the operation.

mediastinum There are and perhaps always will be two plans of removing pulsion diverticula surgically In one the operation is completed in one stage In the other the sac is completely freed from the muscle fibers about its neck and implanted in the wound, to be left for from ten to fourteen days, and a gauze drain placed in the mediastinum from which it has been

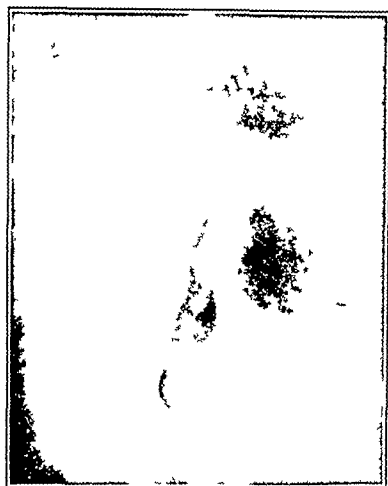


Fig 4—A typical traction diverticulum This type of diverticulum being the result of traction rarely points downward possesses all the muscular coat of the esophagus and so tends to empty itself readily It is dealt with quite satisfactorily by dilation

removed At the end of this time the mediastinum is so walled off by exudate that mediastinitis cannot occur, and the fascia planes in the neck are so closed that cervical cellulitis cannot occur

Both methods have proved their worth in a large experience in several men's hands We have consistently adhered to and further developed the two stage procedure because we have had such a low mortality with it

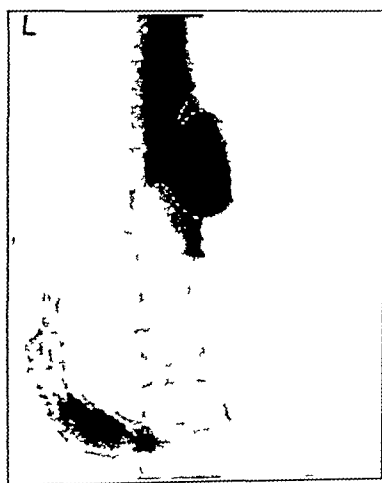


Fig 5—An unusual type of diverticulum It is intrapleural and located just above the diaphragm It distresses the patient because food accumulates in it decays and is disturbing to both his taste and his breath The operative management involves a serious problem The sac must be approached through the pleura If one amputates the sac at its neck there is always the serious menace of leakage from the esophagus with infection the formation of an esophageal fistula and possible death The plan developed and employed by me is diagrammatically illustrated in figure 6

lesion and the lack of one's ability to institute measures which have any great value in checking its progress should it occur

and because it gives us such a feeling of comfort and security to realize that with it the dangers of deep cervical cellulitis and mediastinitis are eliminated We recognize the results obtained by the advocates of the one stage operative plan and in no way wish to detract from its merits We cannot, however, bring ourselves to trust to a suture line in the esophagus or ligature of the neck of the diverticular sac, when the mediastinum has been and still is widely open, without walling off exudate and protective granulations We are conscious of the fact that if leakage at the suture line or at the point of ligature of the sac's neck occurs, contaminated esophageal contents will gravitate into the mediastinum and mediastinitis result Perhaps a relatively large experience with mediastinitis in patients with large intrathoracic goiters has given us too grave an impression of the seriousness of this

Not as an argument against the one stage operation for esophageal diverticulum but rather as an explanation of why we prefer and adhere to the two stage plan, we have said that if we were to operate successfully by the one stage plan in a hundred cases of esophageal pulsion diverticulum but in the hundred and first a leak occurred, mediastinitis developed, and the patient died, we would feel that the other hundred operations would better have been done in two stages and the patients so successfully protected against mediastinitis that the hundred and first would not have died In our entire experience with esophageal diverticulum we have not seen any degree of mediastinal infection

We have never felt that it was necessary to pass an esophagoscope into the sac of the diverticulum We recognize that this procedure is advocated by some and we recognize that in other hands it may be useful We have always, with cervical block anesthesia induced by procaine hydrochloride, been able to dissect the sac completely without this aid With this type of anesthesia, patients can be asked during the operation to swallow, if necessary and the sac can be distended and visualized without difficulty

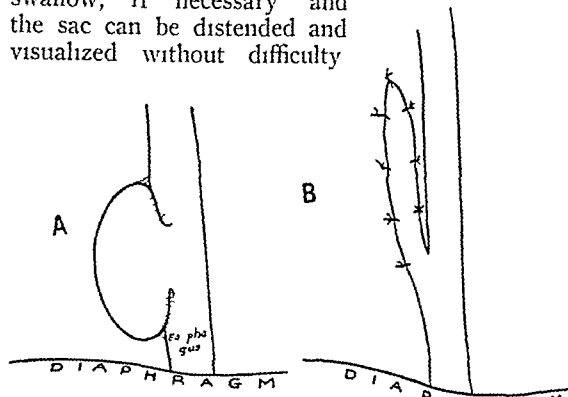


Fig 6—A shows the outline of the diverticulum as it was found at the operation The sac was completely dissected so that it hung entirely by its neck It was then picked up at its outer surface and so carried upward beside the esophagus that it was converted into a tube In order to approach the sac I asked Dr R H Overholt of the department of thoracic surgery to remove long sections of rib over this side of the chest insert rib spreaders collapse the lower lobe of the lung and expose the esophagus The unopened sac was then sutured with black silk sutures to the posterior gutter of parietal pleura beside the esophagus (B) As a result of this implantation of the unopened sac in an upward direction parallel with the esophagus no further bismuth entered the sac and the symptoms due to the diverticulum were entirely relieved This method of taking care of the sac without amputating it proved to be quite satisfactory It is but proper to state in describing the successful outcome of this operation that as a result of collapse of the right lung, even though it was frequently inflated by the anesthetist gangrene of the collapsed right lower lobe occurred The condition was successfully managed by lobectomy done by Dr Overholt

There are undoubtedly different ways of operating for diverticulum, and the type of operation must be settled according to one's personal convictions of the risks involved and the results obtained

While it is not the purpose of this paper to deal with operative details, two measures which I have described in the two stage operation deserve mentioning One is the plan of implanting the sac of the diverticulum in the wound between the first and the second stage of the operation so that it points upward (fig 8 D) and food cannot enter the sac and swallowing is immediately unobstructed The other is the method of burying small diverticular sacs in the wound by attaching the tip of the sac to the upper edge of the thyroid muscles by two black silk stitches as shown in figure 8 D This makes it possible to do two stage operations on any diverticulum no matter how small if it has a sac and, by the employment of the black silk stitches, to find readily the tip of it

sac in the granulating wound when it is reopened at the second operation

In Dr Hoover's follow-up studies of the fifty-three patients operated on over two years ago, it is evident that many of the patients who have had no postoperative dilation have had excellent results. We believe, nevertheless, that postoperative dilation regardless of

the type of operation employed, is logical. If it is true that spasms of the cricopharyngeal and incoordination between the constrictor and the cricopharyngeal is present with this condition, and if it is true that after dissection of the neck of the sac and of the muscle fibers from the neck of the sac a certain amount of scar tissue is present about the esophago-pharyngeal junction then postoperative dilation until the scar tissue is



Fig 7—The esophagus after the administration of a thin bismuth mixture after the operation had been completed. The outline of the upward implanted sac is shown in dots. A small amount of bismuth entered the neck of the sac although no bismuth is seen ascending into the body of the sac itself.

softened will be worth while. In our cases, wide postoperative dilation with a modified Plummer bag has definitely made our end results more satisfactory.

The complications of this operation are for the most part produced at the time of the operation. Whether the sac is removed by a one or a two stage operative plan, since the approach to the sac is directly behind the thyroid and the neck of the sac is at the pharyngo-esophageal junction, where the recurrent laryngeal nerve enters the larynx, that nerve will always be endangered. Five cases of unilateral recurrent laryngeal paralysis have occurred. In four the paralysis proved to be but temporary and in only one has it been permanent. The relationship of the laryngeal nerve to the neck of the sac must be realized, and the nerve must be carefully protected from injury.

Since it is our custom, when the sac is cut off at its neck in the second stage of our operation, not to close the opening into the esophagus but to place a small gauze pack over it for a few days and then permit it to granulate up from the bottom, it is not surprising that in the early cases there were eighteen temporary fistulas. Of these, eight were free from leakage in three weeks, and of the remaining ten, five healed in less than eight weeks. In the five cases in which the fistula did not heal in this time a third operation was done to remove the fistulous tract or a remaining amount of mucous membrane at the neck of the sac, which had been inadequately removed at the first operation. Since we have developed the plan of implanting the sac high in the neck so that it points upward little trouble with fistulas now results.

A secondary abscess developed in the wound in five cases all ruptured themselves or were drained and healed without further complications.

Difficulty in swallowing developed between the first and the second stage in some cases in which the diverticular sac was very large. It was caused by swallowed

air that accumulated in the large sac implanted on the skin (fig 7) and so distended the sac that it pulled on and obstructed the longitudinal esophagus. Thus distention by air of the large sac implanted on the skin can so dilate the sac that its walls become gangrenous. The condition is immediately remedied by suturing a catheter into the dome of the distended sac with a purse string suture. By means of this procedure, done two or three days after the first stage operation, the catheter being guided by the finger in the sac into the esophagus, gastrostomy for preliminary feeding will only rarely be necessary, since feeding through the tube can be carried out.

Two patients have had a complete recurrence of the sac, as a result, we believe, of an inadequate primary removal of the sac. One of them has been reoperated on, with complete relief. The other has so far refused reoperation. Two patients have had partial recurrence, with some symptoms. One had been unsuccessfully operated on elsewhere, and a second two stage operation was done by us. Nineteen patients showed by x-ray examination some retention of bismuth in the hypopharynx, but eleven of these were free from any symptoms whatever.

In two cases the second stage of the operation was not done. A death, the only one in the entire series, resulted from uremia and suppression of urine. In this case there was no local or pulmonary reaction after the operation, and the death was related to the operative procedures only in respect to the fact that the patient would not have had the suppression of urine and uremia if he had not been submitted to an operative procedure. In the second case in which, because

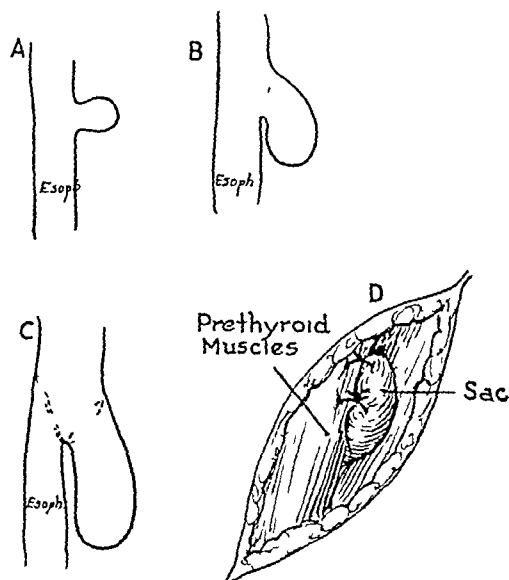


Fig 8—A, B and C demonstrate how the opening into the sac changes position as the sac enlarges. In the early sac the opening is directly lateral as in A as the sac becomes larger and descends it becomes a little more oblique as in B and as the sac becomes still larger and descends into the mediastinum as in C the opening into the sac and the previous transverse opening into the esophagus become oblique. By the traction of the food filled sac the edges of the opening into the true esophagus are brought together so that the opening appears as a mere slit. D shows the method of suturing the sac with black silk stitches to the outer and upper edge of the sternohyoid muscle and also the plan of implanting the sac in the upward direction so that between the first and the second stage food will not pass through it.

of the patient's weakened state the sac was not removed at a second stage operation but was dissected free and left implanted high in the wound, there has been complete relief of all symptoms. We have never

been of the impression that if the sac were completely freed and sutured so high in the neck that food did not enter into it there would be complete relief of symptoms. This patient has now been over three years without a return of symptoms and we believe that in the very old and in bad risks, such as he was, the procedure followed is sensible and justifiable.

SUMMARY

The end results in fifty-three cases of pulsion esophageal diverticulum were as follows: failure two, poor results two and good results forty-nine.

An unusually large supradiaphragmatic esophageal diverticulum was successfully operated on.

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ABSTRACT OF DISCUSSION

DR STUART W. HARRINGTON, Rochester, Minn. While a diverticulum may be present in any part of the esophagus, it more commonly occurs in the upper portion at the junction of the esophagus and the pharynx. Diverticula in this location are most commonly of the pulsion type. Their location is fairly constant in the posterior wall of the pharynx at the level of the cricoid cartilage in an area of muscular deficiency. Such diverticula are essentially herniations of the inner layers of the esophagus through the muscular layers, and the only treatment that effects relief of symptoms is complete surgical removal of the sac. The operative treatment of pharyngo-esophageal diverticulum may be carried out in one or two stages. The one-stage operation is more applicable to small diverticula, principally those in which there is a fairly definite neck to the sac. The indications for this operation are much less frequent than for the two stage operation. Of the 227 patients with pharyngo-esophageal diverticulum who were operated on at the Mayo Clinic from Jan. 1, 1908, to Jan. 1, 1937, forty-seven underwent the one stage operation and 180 the two stage operation. In the one stage operation the sac is ligated at its junction with the esophagus and the stump is either inverted or plicated into the wall of the esophagus, care being taken that the sac is removed completely. I believe that the possibility of recurrence following the one stage operation is less than that for the two stage operation because the true neck of the sac can be visualized and more accurately removed at the original operation. In the two stage operation the sac is dissected from the surrounding structures and brought outside the wound. The neck of the sac is sutured to the underlying muscle and skin at the upper angle of the wound. Care should be taken to turn the neck of the sac upward in order that it can drain and also be more readily identified and accurately removed at the second stage of the operation. In cases in which the neck of the diverticulum is large and it is difficult to identify the true junction with the esophagus I have found it helpful to place a loose silk suture round the neck of the sac at its junction with the esophagus as a landmark to facilitate its identification at the second operation. The sac is completely removed in the second stage of the operation, which is usually done within six to eight days after the first stage. The two stage operation is usually done for large diverticula, particularly those that extend into the mediastinum and in cases in which there is considerable inflammatory reaction around the sac.

DR THOMAS A. SHALLOW, Philadelphia. Dr. Lahey has emphasized the value of the two stage procedure for the removal of pharyngeal diverticula solely on its safety, owing to the prevention of mediastinitis. There is no question that mediastinitis did follow the old operative procedure not because the procedure was wrong but because it had not been perfected. Not until the work of Jamison in conjunction with Lord Moynihan in 1927 did we obtain our first accurate anatomic knowledge of the site of origin of pharyngeal diverticula. With this information all procedures except the one stage combined method of surgical removal were abandoned. The principles on which this procedure is based are as follows: (1) to leave the pharynx and esophagus in normal anatomic relationship; (2) to repair the hernia—not only the hernial sac but the

pharynx through which defect the herniation occurs, (3) to do this without leakage and as a primary procedure. Normal anatomic position and physiologic function can be secured or with the aid of the esophagoscope. No surgeon is so sure of himself in the removal of the mucous and submucous as even in a one stage procedure, that he can disregard the value of modern medical contributions, in this instance the esophagoscope. With the esophagoscope in position after the sac is identified, it is impossible to produce constriction or distortion of the pharynx or the esophagus when removing the sac and repairing the pharyngeal musculature. The third principle, failure of leakage and prevention of mediastinitis, rests solely in the hands of the surgeons. In contrast, the advocates of the two stage procedure do not leave the esophagus and pharynx in their normal relationship because secondary dilation is almost universally required. The patient is subjected to two operative procedures instead of one. Dr. Lahey removes the musculature around the neck of the sac. In the one stage procedure the musculature is used for repairing the defect in the pharyngeal wall. No attempt is made to repair the pharynx, but since one is dealing with a hernia of this structure, repair is the first principle of the cure. My experience is based on ninety-nine cases of repair of pharyngeal diverticula by the one stage procedure with four deaths—two from uremia, one from rupture of the lung when I was using the intratracheal apparatus and one from coronary disease occurring on the sixteenth day. In none of these cases were there any evidences of mediastinitis.

DR W. WAYNE BARCOCK, Philadelphia. The only advantage that has been claimed for the two stage operation for esophageal diverticulum over the single stage procedure is a lessened risk of mediastinitis. The modern one stage operation has a much shorter period of disability, much less discomfort, and restores normal swallowing function without stricture or the need of the dangerous secondary bougienage. It eliminates the open infected wound of the two stage operation and was followed by primary union and a nearly invisible scar in 94 per cent of our cases. As I have never seen mediastinitis follow, I think the one stage method the safer procedure. Since 1930, sixty-five patients with esophageal pouches have been admitted to the Chevalier Jackson Bronchoscopic Clinic at Temple University. Nineteen patients, mostly with small sacs and milder symptoms were referred to their home surgeons. Forty-six, from 30 to 89 years of age, remained for the one stage operation. The bronchoscopic assistance devised by Dr. Jackson enabled a cleaner operative field, aided an accurate water and air tight closure of the esophagus with suture and ensured an esophagus of uniform caliber without stricture. Of the patients 70 per cent were males, forty-two had dysphagia and eructations from one week to fifteen years, twenty-two cough and secretion, twenty gurgling, four fullness in neck. The sac was small in sixteen of medium size in eleven, and large in twenty-five. With the patient under local anesthesia, light tribromethanol amnesia being employed, a transverse incision was used without division of any important vessel or muscle. A minute split tube drain was left for the first forty-eight hours. Normal swallowing function was proved before patients were discharged by barium sulfate and x-ray study. There has been no recurrence, no stricture, no secondary bougienage, no mediastinitis. Two had temporary left recurrent palsy. One had a previous unsuccessful anchorage operation. Over one-half left the hospital healed and with normal swallowing function in from ten to sixteen days. The only death was from a coronary accident in a cyanotic cardiopathy of 83 years. In other words, there was no death due directly to the operation. Dilation of the esophagus so often required after the two stage operation is a not uncommon cause of mediastinitis, but suppurative mediastinitis is not invariably fatal. Of seven cases of mediastinitis following various lesions of the esophagus we were able to save six by a simple method of drainage through the neck. I feel that the danger of mediastinitis from the improved one stage operation for esophageal diverticulum has been much exaggerated.

DR FRANK H. LAHEY, Boston. I very much appreciate the discussions by Drs. Harrington, Shallow and Barcock. I am always perfectly certain that a discussion is to whether one should operate on a patient by a one stage or a two stage procedure will get a little hot and it is a very good thing.

is one of the ways by which all the facts are brought out and presented. When we have finished we shall all I believe select our methods as I have stated in the paper based on our own impressions and our own experiences. Of course it is easy for us to pick up an argument to support our own method as opposed to another, that applies to me, and it applies to those who advocate the one stage procedure. As to the question of the dangers of postoperative dilation there have been no fatalities, no complications at all from dilation. It is unfair to apply these two cases with preoperative mediastinitis to the operative risk, because both patients had preoperative mediastinitis literally months before they came to us for operation. Their problem was not in our hands, as these accidents occurred elsewhere than in the clinic. One required a posterior rib resection and a posterior approach to the mediastinum, the other required gastrostomy and prolonged drainage from the mediastinum. Both came within an ace of dying. As to Dr. Shallow's argument you must allow me a little shot back at him. He says that if it were so that one could not depend on primary sutures we would not have gastric resections and we would not have colon resections. From my point of view one should not have primary colon resections. We gave up primary colon resections years ago because the mortality was so high. We haven't done it for eight years. They are all done in two stages and the danger of peritonitis is entirely eliminated. He says that if we go on with two stage operations in this way we are in the horse and buggy age and that if we continued this way we wouldn't be flying around in airplanes the way we are. Well it is my opinion particularly as relates to one stage operations that as the result of them a lot of these people are flying around but they aren't flying around in airplanes.

RELAPSING FEBRILE NODULAR NON-SUPPURATIVE PANNICULITIS

(WEBER-CHRISTIAN DISEASE)

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In 1925, under the title "relapsing nonsuppurative nodular panniculitis" Weber¹ described an unusual clinical syndrome which was characterized by crops of subcutaneous nodules occurring during febrile periods and which on histopathologic examination was found to be accompanied by a particular type of fat atrophy. He felt that the syndrome was similar to that described by Pfeiffer² in 1892 and by Gilchrist and Ketron³ in 1916. More recently additional cases have been reported,⁴ and Christian,⁵ in one of these, properly modified the title by the addition of the word febrile.

My interest in this condition was stimulated primarily by its unusual severity in the first of the following five cases, which were seen at the Mayo Clinic. Because of the unusual features of this case the report is given in detail, in the other cases the reports are summarized.

Read before the Section on Dermatology and Syphilology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

¹ Weber, F. J. A Case of Relapsing Nonsuppurative Nodular Panniculitis Showing Phagocytosis of Subcutaneous Fat Cells by Macrophages. *Brit. J. Dermat. & Syph.* 27: 301-311 (July) 1925.

² Pfeiffer, Victor. Ueber einen Fall von herdwieser Atrophie des subcutanen Fettgewebes. *Deut. ches. Arch. f. klin. Med.* 50: 438-449 (1892).

³ Gilchrist, T. C. and Ketron, I. W. A Unique Case of Atrophy of the Fatty Layer of the Skin Preceded by the Ingestion of the Fat by Large Phagocytic Cell Macrophages. *Bull. Johns Hopkins Hosp.* 27: 291-294 (Oct.) 1916.

⁴ Alder, H. E. and Wray, S. C. Relapsing Febrile Nonsuppurative Panniculitis (Weber). *Arch. Dermat. & Syph.* 27: 440-449 (March) 1933.

⁵ Christian, H. A. Relapsing Febrile Nodular Nonsuppurative Panniculitis. *Arch. Int. Med.* 42: 353-351 (Sept.) 1928.

REPORT OF CASES

CASE 1—A single woman aged 24 was admitted to the hospital July 28, 1934 complaining of fever, malaise and persistent subcutaneous nodules of four months' duration. There was no history of tuberculosis in the immediate family. The patient had enjoyed excellent health with the exception of bilateral otitis media in childhood and an attack of influenza in 1926. Early in April 1934 a slightly tender subcutaneous nodule was noted on the left upper part of the abdomen. There were no other subjective signs at the time but two weeks later because of slight malaise she consulted a physician who found that her temperature was 102 F and that other similar nodules were present on the thigh and shoulder. There was slight erythema over the original lesion which had increased to about 8 cm in diameter but there was no noticeable change on the skin over the other nodules. Since that time there had been episodes of fever the temperature varying from 102 to 104 F and new nodules appeared all of which had apparently persisted until the time of her admission. In this interval the patient had lost 20 pounds (9 Kg). She received much medication possibly including iodides during this time, and prior to the onset of her difficulty she remembered having occasionally taken a proprietary cold-laxative tablet.

Although the patient's temperature was 102 F on admission she did not appear acutely ill. She weighed 179 pounds (81 Kg) and aside from the cutaneous condition general physical examination gave essentially negative results. The heart and lungs were apparently normal and the liver and spleen were not palpable. The tonsils were enlarged and pus could be expressed from the crypts. The systolic blood pressure in millimeters of mercury was 120, the diastolic 82. There was evidence of secondary anemia in the estimation of hemoglobin as 54.6 per cent, erythrocytes numbered 3,970,000 and leukocytes 5,100 per cubic millimeter of blood. Other laboratory examinations including urinalysis Kahn, Kline, Hinton and Kolmer Wassermann tests of the blood, studies of liver function, and agglutination tests for *Bacillus typhosus*, *B. paratyphosus*, *B. tularensis* and *B. abortus* showed no abnormality. Tuberculin tests by the Mantoux method and with purified protein derivatives were negative. Roentgenologic study of the thorax showed slight elevation of the diaphragm on the left and a roentgenogram of the teeth elicited two areas of periapical infection.

On examination of the skin approximately thirty subcutaneous nodules varying from 1 to 12 cm in diameter were palpable on the abdomen, upper part of the back, shoulders, arms, lumbar region and thighs. These occurred singly and in groups. The skin overlying the nodules was unchanged where small deep lying nodules occurred. Two of the larger lesions were apparently firmly fixed to the skin which was slightly depressed, bluish red, brown on palpation and moderately pigmented (fig. 1). Others showed varying degrees of diffuse or mottled erythema. Local heat and tenderness on pressure varied considerably but none of the lesions were distinctly painful. The outer right thigh showed some diffuse irregular depression and was smaller than the left. There seemed to be no tendency toward suppuration.

The patient was hospitalized for 115 days. During this period her temperature rose each afternoon to between 101 and 105 F and usually did not fall below 100 during the twenty-four hours. The sedimentation index varied from 169 to 174. Hemoglobin ranged from 42 to 65 per cent, erythrocytes from 2,780,000 to 3,970,000 and leukocytes from 3,100 to 8,300 per cubic millimeter of blood. No significant manifestations were reported on examination of the blood smears. A few days after admission bilateral otitis media developed which responded to local treatment. The following procedures were performed at various times during this period with no apparent beneficial effect: four transfusions each of 250 cc of blood, twelve intravenous injections of molar sodium arsenite, two injections of gold sodium thiosulfate intravenously and two intravenous injections of gentian violet. Silver and whole milk were given once each. Ferric citrate and viosterol were administered over extended periods. Filtered roentgen rays were applied over the affected areas on two occasions. New crops of nodules appeared from time to time and there was

considerable edema present in one arm and leg when the patient was dismissed. Ten blood cultures were reported negative.

An early, deep lesion was removed from the abdomen on August 3, and direct smears made from it were negative for evidence of Hansen's and tubercle bacilli. Direct cultures showed no growth and two animal inoculations gave negative results. On histopathologic examination of a section from

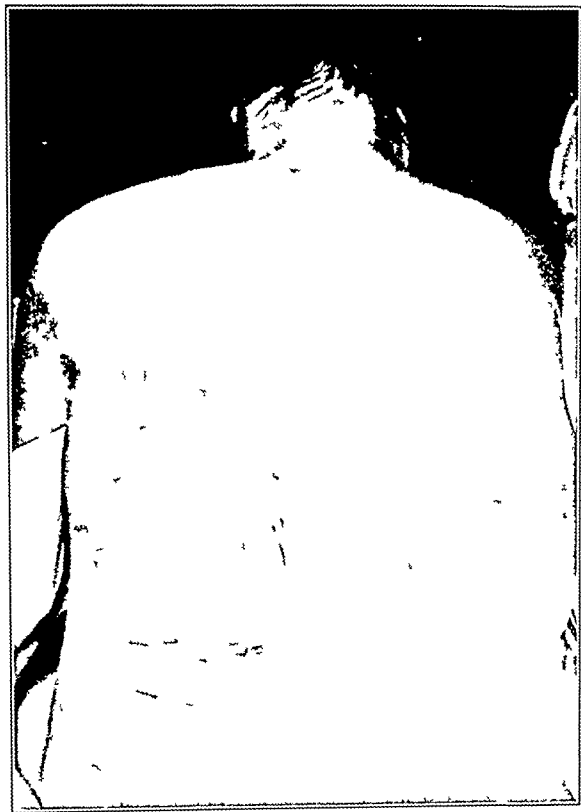


Fig 1 (case 1)—Multiple subcutaneous nodules on the back showing little visible change except slight erythema and depression.

the lesion, the cutis showed edema and a moderate perivascular infiltrate but otherwise was normal (fig 2). There was edema and necrosis of the fat tissue and edema of the connective tissue between the fat lobules. A focal infiltrate of lymphocytes, round cells, plasma cells, endothelial cells, polymorphonuclear leukocytes and macrophages was present between the fat cells and in the connective tissue septums. The blood vessels showed periarteritis organization and proliferation of the intimal lining in varying degree. The sudan III stain showed stellate and spindle connective tissue cells and polyblast macrophages (round) filled with fat droplets. Fat droplets were seen lying free owing to the disintegration of the fat cells. Macrophages could be seen invading the fat cells and in two areas there were atypical giant cells. A second more superficial nodule was removed from the chest on October 4 and this on histopathologic examination showed changes similar to those just mentioned which was consistent with the diagnosis of panniculitis (Weber). There was no evidence of tuberculosis. The patient returned to her home on November 19 and the process continued essentially the same until her death on June 11, 1935. Permission for necropsy was refused.

CASE 2—In September 1934 a married woman aged 43 was referred to the Section on Dermatology because of a history of recurrent subcutaneous nodules occurring on the trunk and extremities and associated with chilly sensations and malaise of about four months duration. Her previous history was pertinent only in that she had taken an iodine medication daily for about the same period having had a stroke during the previous year.

The blood pressure reading of 225 systolic and 160 diastolic with the concomitant observations suggested a diffuse arterial

disease. Purulent material was expressed from the tonsils, but there was roentgenologic evidence of periapical infection of several teeth. Physical and roentgenologic examinations of the thorax gave negative results. The value for hemoglobin was 69 per cent, and there were 4,630,000 erythrocytes and 69,000 leukocytes per cubic millimeter. The Kline and Kahn tests of the blood were negative. The temperature was 99.4 F. Palpable nodules, varying from about 0.25 to 2.5 cm. in diameter were found on the back, shoulders, breasts, buttocks and thighs. None of these areas showed more than a slight erythema and there was no pain except on firm pressure. A lesion was removed from the right thigh for biopsy and Dr. Montgomery reported early changes suggestive of relapsing febrile nodular nonsuppurative panniculitis.

No new lesions were evident on examination after a lapse of one year, but in a letter a short time later the patient mentioned the appearance of a number of new nodules on resuming an iodine-containing medication; these disappeared when the medication was discontinued. In a subsequent letter, received in October 1936, no mention was made of any recurrence.

CASE 3—On the occasion of a previous visit to the clinic in 1921, a married woman, aged 56, was apparently in good health except for evidence of infection of the teeth and tonsils. On her return in October 1935 she stated that in December 1934 she had been ill with fever and "muscular" pains of one week's duration; this had been accompanied by slightly painful nodules on the upper part of the thighs. There was gradual recovery, and then a brief relapse. A short time before her last admission she had noted a return of symptoms. She had occasionally taken a medication containing bromides since 1921.

General examination, with the exception of the cutaneous changes and roentgenologic evidence of a poorly functioning

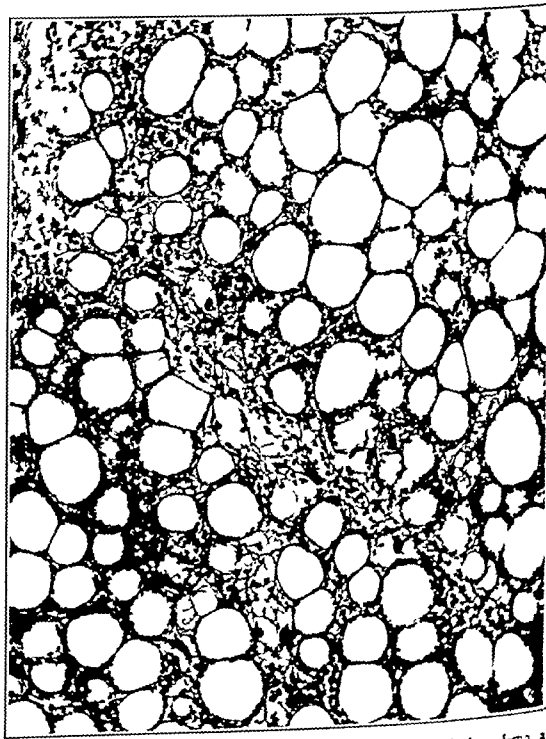


Fig 2 (case 1)—Subcutaneous fat showing diffuse slight edema and fat necrosis and infiltration with phagocytic cells of foamy appearance (X 100).

gallbladder with stones gave negative results. There was a definite depression with erythema and slight pigmentation over several subcutaneous firm tender nodules from 3 to 6 cm. in diameter which were present on both thighs, the right leg and the abdomen (fig 3). Biopsy of a lesion on the abdomen was reported as typical of Weber-Christian disease. There was little change in the cutis with lymphocytes, plasma cells and phagocytes invading the subcutaneous fat; there were rare

large nucleated cells with foamy cytoplasm in glandlike arrangement and some increase in the connective tissue and occasional cells with multiple nuclei. Some of the larger blood vessels were obliterated. One culture of the blood was reported negative.

While the patient was under observation a small nodule appeared on the right thigh and the temperature became elevated for two days to 102 F. November 22 after she apparently had been free from fever or activity of the lesions there was a recurrence of similar nodules with an elevation in temperature to 102 F. She stated that her only medication had been an antirheumatic remedy which contained potassium iodide. The patient has not replied to recent letters of inquiry regarding further recurrences.

CASE 4—In February 1920 a man aged 38 was examined at the clinic because of recurrent attacks of red subcutaneous nodules of four years' duration. He had suffered from attacks of tonsillitis and rheumatism since the age of 6 years when torticollis had developed. His tonsils and teeth had been removed without any effect on the recurrence of the nodules. These attacks were not seasonal and the lesions appeared on

with slight perivascular infiltration (figs 4 and 5). In the subcutaneous portion the fat lobules showed diffuse changes, consisting mainly of large cells with foamy cytoplasm and many containing several large nuclei interspersed between the fat cells. In places there were varying numbers of polymorphonuclear cells, plasma cells, lymphocytes, endothelial cells and fibroblasts. No typical Langhans or Touton giant cells were seen. The connective tissue septums were little



Fig 3 (case 3)—Flattened area on left thigh and distinctly depressed areas on right thigh at the sites of involuting lesions.

the arms, legs and thighs. Fever had accompanied their onset on at least two occasions. The patient was extremely nervous and admitted drinking large quantities of alcohol daily. He had taken many proprietary nerve tonics, daily doses of an effervescent bromide remedy and varying quantities of paregoric. He denied the hypodermic use of opium derivatives.

The patient was obese and weighed 210 pounds (95 Kg). His temperature was normal and he appeared to be in good health. The blood pressure in millimeters of mercury was 170 systolic and 118 diastolic but examination otherwise with the exception of the cutaneous complaint gave negative results. A Wassermann test of the blood was negative. Blood cultures resulted in no bacterial growth. About ten subcutaneous nodules from 1 to 3 cm in diameter, were palpable on the back of the arms, thighs and legs, some showing slight erythema. There were no evident scars characteristic of hypodermic injections or resulting from suppuration. Definite depressed and flattened areas were present presumably at the sites of former lesions. Small typical psoriatic plaques were present over the elbows and knees.

A nodule was removed from the left thigh for biopsy. Examination revealed a few dilated blood vessels in the cutis

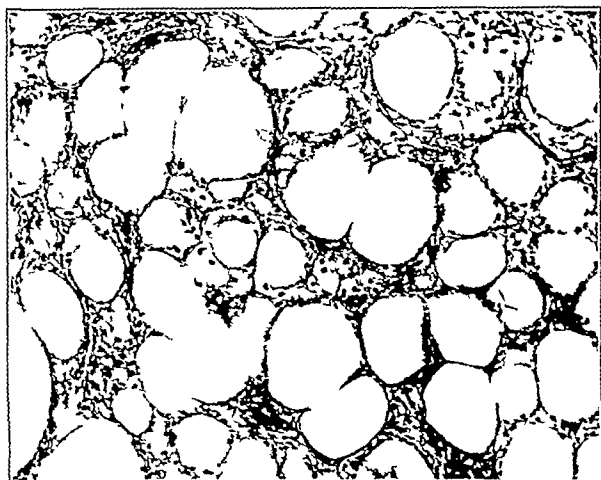


Fig 4 (case 4)—Subcutaneous fat showing large numbers of phagocytic cells and the relatively small degree of fibrosis slightly reduced from a photomicrograph with a magnification of 100 diameters.

changed and although there were occasional obliterated vessels lying within them the blood vessels as a whole showed little change. The histopathologic diagnosis was deferred.

Nodular syphilis, erythema induratum, erythema nodosum and a migratory phlebitis were considered as possible diagnoses, and the patient was given seven intravenous injections of arsphenamine as a combined provocative and therapeutic test. The Wassermann test remained negative. During this period there was an exacerbation on two occasions, with a slight elevation in temperature. The patient was then dismissed for institutional care for alcohol and drug addiction. Until 1925 when per-

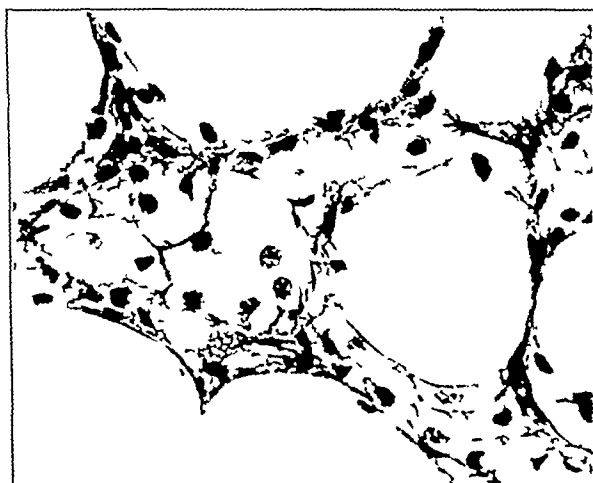


Fig 5 (case 4)—Subcutaneous fat. Higher magnification showing the glandlike arrangement and foamy cytoplasm of the phagocytic cells slightly reduced from a photomicrograph with a magnification of 490 diameters.

manent institutional care was advised the patient was examined five times, each visit being prompted by a return of the nodules. The highest temperature recorded was 100.2 F. General examination was essentially negative each time. On the occasion of his last visit both the spinal fluid examination and Wassermann test of the blood were negative and a trial with a combination of neoarsphenamine coagulen (Ciba) and a stock

streptococcus vaccine had no appreciable effect. No information regarding this patient after that time could be obtained.

CASE 5—A married woman, aged 45, entered the clinic in March 1920 complaining of recurrent attacks of nodules at various times without seasonal relationship during a period of five years. Her history otherwise was unimportant. The attacks were ushered in by chills and fever, and from one to

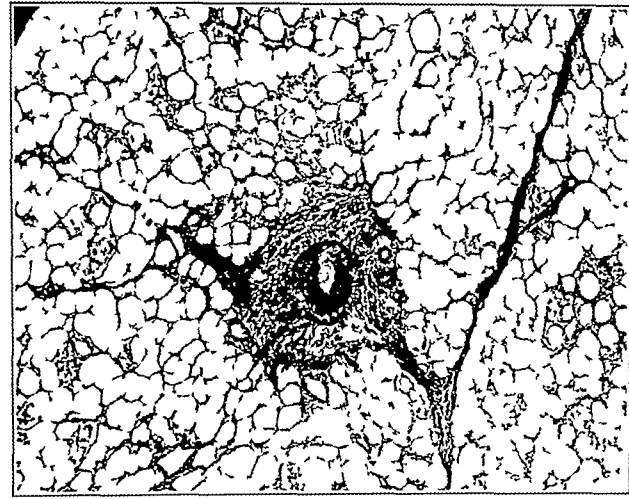


Fig. 6 (case 5)—Subcutaneous fat showing fibrosis around a large blood vessel. The intralobular fibrous septums show little change. The diffuse changes in the fat lobule consist mainly of invasion of phagocytic cells. Slightly reduced from a photomicrograph with a magnification of 33 diameters.

twelve nodules would appear within a week on the trunk or extremities. No accurate history was obtained regarding previous medication.

The patient was slightly obese and weighed 140 pounds (63.5 Kg.). General examination with the exception of infected tonsils and teeth and the condition of the skin gave essentially negative results. A roentgenogram of the thorax, urinalysis, the Wassermann test, routine blood counts, a blood culture and a Pirquet tuberculin test were all negative. Examination of the skin revealed deep nodules up to 3 cm. in diameter on the right arm near the elbow and on the thighs. A few depressed, slightly cyanotic and pigmented depressions were noted on the trunk. Slight erythema was present over the nodules, but they were not painful.

A nodule was removed from the thigh for biopsy (figs. 6 and 7) and there were three opinions regarding the histopathologic observations, namely subdermal inflammation, a questionable small abscess deep in the subcutaneous fat and atypical erythema nodosum. The diffuse changes occurring around a sclerosed blood vessel are shown in figure 6.

No further nodules appeared on observation over the next six weeks, during which time six intravenous injections of neoarsphenamine were given and the tonsils and infected teeth were removed. One month after returning home however the patient had a marked recurrence of the condition with fever of one week's duration, and she had to be hospitalized. Her home physician gave her a prescription containing potassium iodide which she used for four months. During this period she stated that there had been repeated new crops of nodules. On her return to the clinic late in November her temperature was 99.8 F. and there were new nodules on the thighs, legs and upper part of the left arm. These receded slightly during the next week. When questioned recently the patient did not recall having had any attacks after 1930 but stated that a depressed area remained on one thigh.

REVIEW OF THE LITERATURE

Of the eight patients whose cases are reported in the literature (summarized in the accompanying table), six were adult women, one was a girl of 8 years, and one was a man of 53. There seemed to be nothing pertinent to the condition in the personal or family history or in the results of a general examination. Evident foci of infec-

tion of the teeth or tonsils were present in three cases (3, 5 and 8), two patients had syphilis (1 and 7). The nodules themselves varied in size from 0.5 to 9 cm. in diameter, showed no tendency to suppuration and appeared most frequently on the thighs although they were found also on the trunk and arms. The attack varied in duration from one month to fifteen years; they occurred at irregular intervals of weeks to years without apparent relationship to season. Varying degrees of fever and malaise usually were present with the attack, the most severe degree being reported in Christian's case. Depending apparently on the depth of the nodule, varying degrees of erythema were noted on the overlying skin. On involution, definite depression of the previously involved sites was of special note in five cases (1, 2, 4, 5 and 6), and Christian tabulated this as one of the clinical criteria for diagnosis. Weber felt that the previous ingestion of drugs, particularly iodide and bromides, might be considered one of the etiologic factors and presented one case in illustration. With the possible exception of one case (5), in which there was a possible flare up of the condition after a tuberculin test, the question of tuberculosis as an etiologic factor did not seem pertinent. Agglutination tests for undulant fever were made in three cases (4, 5 and 8) and were negative; cultures of the blood and of the nodule itself were likewise negative in these cases.

Histologic descriptions and illustrations show only minor variations. The report of Christian may well be taken as an example.

In places edema and necrosis of the fat tissue, edema of the connective tissue between fat lobules, and a local inflammation between the fat cells and in the connective septums of lymphoid cells, plasma cells, young connective cell, endothelial cells, phagocytic for fat droplets, a few polymorphonuclear leukocytes and a rare foreign body giant cell so that the subcutaneous tissue thus was infiltrated. Fat acid crystals were not present. Blood vessels as a rule were

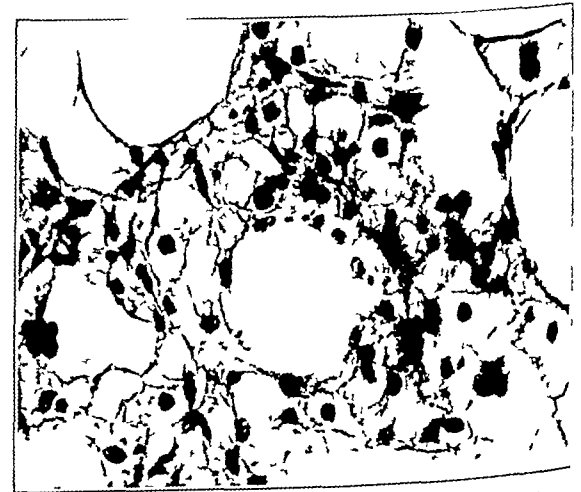


Fig. 7 (case 5)—Subcutaneous fat. Higher magnification of a foamy cell with multiple nuclei, somewhat resembling a xanthoma cell. Slightly reduced from a photomicrograph with a magnification of 66 diameters.

normal. A few showed periarteritis, rarely one showed endarteritis with proliferation of the endothelial cell. If inflammatory process did not extend to the dermis and the skin itself was not scarred.

Emphasis is placed particularly on the large cell with foamy cytoplasm arranged in glandlike manner between and around fat cells, variously described as macrophages and histiocytes accompanied by multinucleated giant cells by Weber, Gilchrist, Kelson, Mohr,

and Way, diffuse fibrosis by Pfeifer and Weber and fibrosis as a terminal stage by Alderson and Way. Brill, however, described a nodule of long duration which did not show fibrosis.

COMMENT

The five cases of relapsing febrile nodular nonsuppurative panniculitis I have described agree in essential clinical and histopathologic characteristics with the eight cases reported in the literature. Case 1 demonstrates the severe character which may occasionally be manifested by this syndrome, indicating the possibility of a protracted course without remission. Christian's case was the most severe of those previously reported and it may be seen that a particular similarity exists also on histopathologic examination in the degree of diffuse necrosis present, the few giant cells and the small degree of fibrosis. All five of the patients had obvious infec-

Among these, erythema nodosum will be considered first. The shorter duration, frequent seasonal recurrences, the distribution of the nodules, usually on the lower extremities, and the definite tenderness and bruise-like color changes serve to distinguish it from the Weber-Christian type of panniculitis. Although a persistent type of erythema nodosum has been reported,⁷ it does not differ materially from the usual type except with respect to its longer duration. Giant cells have been seen in histologic sections in cases of erythema nodosum but the process is usually characterized by more infiltrate in the cutis and marked vascular changes. Erythema nodosum-like lesions have frequently been reported⁸ following the injection of several drugs particularly iodides and bromides, associated with certain diseases, and at the site of injection of bacterial antigens and vaccines. Erythema induratum in spite of its usual

Relapsing Febrile Nodular Nonsuppurative Panniculitis

Author	Age Years	Sex	Dura- tion Years	Description	Histopathologic Features
1 Pfeifer	23	♀	3	Recurrent subcutaneous nodules occurring in crops (3) of hazel nut size present over trunk and extremities showing only slight lividity and tenderness and leaving flattened depressed areas on involution	Small cell infiltrate perivascular and between fat cells multinucleated endothelial and fat cells fibrous perimesarteritis and endarteritis of small vessels
2 Gilchrist and Ketron ²	8	♀	3½	Feverish attacks (3+) accompanied by finger sized lumps under skin showing bluish tint and involving legs and thighs involution resulted in sunken areas	Clanlike foam cells some multinucleated small round cells fibroblasts plasma cells fibrosis near cutis some vessels showed proliferation of endothelium and connective tissue around them
3 Weber ¹	40	♀	1	Three prolonged attacks of fever and various sized subcutaneous swellings with overlying redness on the arms thighs and buttocks tender on palpation without bruise-like coloration	Interstitial infiltrate of polymorphonuclear leukocytes eosinophils lymphocytes and plasma cell but predominantly histiocytes phagocytic to fat some multinucleated
4 Christian ⁶	20	♀	10	Ten attacks of high fever accompanied by subcutaneous nodules up to 7 cm in diameter with out marked changes in the skin occurring on the trunk arm and legs and leaving irregular depressions	Changes in subcutis only edema and necrosis of fat tissue focal infiltrate of the septum composed of lymphoid cells plasma cells and connective tissue cells endothelial cells phagocytic for fat and a few polymorphonuclear leukocytes few blood vessels show periarthritis and minimal endarteritis
5 Alderson and Way ⁴	41	♀	10	Numerous attacks of painful nodules on the arms thighs and legs showing dusky erythema on the skin accompanied by joint pains and fever and showing some flatness over the arms and thighs	Changes only in adipose layers nodules of giant cell lymphocytes lipophagocytes endothelial cells fibroblasts eosinophils and occasionally plasma cells perivascular infiltration
6 Netherton ⁴	46	♀	1	Recurrent attacks of pea to hazel nut sized nodules on legs dull red and painful and showing some dimpling of surface	Lipid granuloma normal some perivascular infiltrate dilated cells and fibrosis of the corium diffuse cellular infiltrate in subcutis of young connective tissue cells multinucleated giant cells and lymphocytes thickening of walls of blood vessels
7 Weber ⁴	53	♂	2½	Two attacks of tender subcutaneous nodules on the arms and leg accompanied by fever and apparently appearing after the ingestion of iodides	No biopsy
8 Brill ⁴	19	♀	3	Recurrent attacks (4) of tender subcutaneous nodules involving the trunk arms and thighs pea to walnut sized with little or no changes in the overlying skin fever accompanied the attacks and definite depressed areas followed them	No change in skin patchy and diffuse cellular infiltration of subcutaneous fat with macrophages cells with foamy cytoplasm and lymphocytes no necrosis and no fibrosis no distinct changes in blood vessels

tion of the teeth and tonsils although in case 4 there were recurrences of the lesions after the removal of these foci. Also all five patients had taken bromides or iodides, and in cases 2 and 5 there was an apparent recurrence after administration of the latter medication and remission on discontinuing it.

On perusing the literature one finds little agreement as to what conditions should be considered under the general heading of panniculitis. It seems best to use this term however only in the general sense encompassing all pathologic states in which the subcutaneous fat is involved and not as synonymous with the relapsing febrile nodular nonsuppurative type. In the recent classification by Keil⁹ emphasized by the further comment of Weber, the latter is placed in a subgroup and for convenience is considered an entity. Therefore it must be differentiated from the other diseases which may involve the subcutaneous fat.

tendency to appear on the lower extremities and its protracted course and involvement of the overlying epidermis with necrosis and ulceration, may occasionally be found only in the subcutaneous fat. Usually however the degree of Wucher atrophy, the specific tubercle formation, epithelioid cells, "rosette giant cells" and the marked vascular changes distinguish it histologically.

The subcutaneous sarcoid of Darier-Roussy may offer clinical similarities, but this condition does not usually lead to the loss of subcutaneous fat and the resultant depression on involution of the lesion, and it shows histologically such characteristics as epithelioid tubercles, marked fibroblastic proliferation periarthritis and periphlebitis, which readily distinguish it from the

7 Pick W. Erythema nodosum perennis. Arch f Dermat u Syph 82:271 1906. Wohlstein Emanuel. Statistische Form des Erythema nodosum. Dermat Ztschr 63:402-408 (May) 1932.

8 Tachau Paul. Erythema exudativum multiforme und nodulosa in Jadassohn J. Handbuch der Haut und Geschlecht Krankheiten Berlin Julius Springer G 584-677 1928.

9 Montgomery Hamilton. Histopathology of Various Types of Cutaneous Tuberculosis. Arch Dermat u Syph 75:698-712 (April) 1917.

Weber-Christian type of panniculitis.¹⁰ The variation of the tuberculin test, depending on the degree of anergy present, precludes its employment in a differential capacity. In spite of the characteristic histologic appearance of the fully developed lesion in erythema induratum and sarcoid, Goeckerman¹¹ has called attention to the fact that it may be impossible to differentiate these in their early stages from other inflammatory processes. If relapsing febrile nodular nonsuppurative panniculitis, then, is to be considered akin to the three conditions just enumerated, it must demonstrate a particularly effective, early local defensive mechanism.

Another group of conditions, resulting from mechanical and chemical damage to the subcutaneous fat, however, show much more histologic similarity, although they do not necessarily compare clinically and many times can be ruled out by the history alone. These are subcutaneous fat necrosis of the new-born,¹² traumatic fat necrosis of the breast,¹³ insulin fat atrophy,¹⁴ paraffinoma,¹⁵ and the inclusive general grouping of ischemic fat necrosis,¹⁶ lipogranulomatosis,¹⁷ and oleogranuloma.¹⁸ Certain rare types of thrombophlebitis offer close clinical similarity to panniculitis of this type, and it may be necessary to look for histologic evidence of reactive inflammation of the vein and thrombosis as distinguishing characteristics.¹⁹

A histologic feature of the Weber-Christian type of panniculitis not previously emphasized is the tendency for the interlobular connective tissue septums to retain the same width throughout. Edema, necrosis and infiltration may be present, but extensive fibrosis extending from the point where the larger blood vessels lie is usually conspicuous by its absence. Thus it seems that the changes occur mainly as a result of appearance of lipophagic cells around the smaller blood vessels within the fat lobule. The foam cell resembles that of xanthoma and, without regard to controversy regarding its origin, it is of the phagocytic type and is variously called "histiocyte," "polyblast," "granuloma cell," and so on. These cells at times are clumped, with coalescence of their cytoplasm forming multinucleated giant cells. Similar pathologic pictures resulting from actual

trauma,²⁰ the injection of oily and other foreign substances, bacterial and nonbacterial,¹ and recently of various physiologic solutions, have been seen. In spite of the lack of knowledge regarding the etiology and exact nature of chronic relapsing febrile nodular nonsuppurative panniculitis, one may conclude that it may represent not a disease entity but simply a syndrome involving a particular reticulo-endothelial response.

SUMMARY

In reviewing the literature on relapsing febrile nodular nonsuppurative panniculitis and analyzing the cases reported which seem to demonstrate typical clinical and histologic features, the following characteristics stand out clearly. From a clinical standpoint these are (1) recurrent attacks of malaise and fever, of widely varying degree, accompanied by subcutaneous nodules, (2) predominant occurrence of the condition in adult women, (3) localization of the subcutaneous nodules on the trunk or extremities but mainly on the thigh, and (4) a tendency to subcutaneous atrophy with resultant depression at the site on involution. The histologic features are (1) edema and necrosis, primarily involving the subcutaneous fat, (2) diffuse appearance of cells phagocytic for fat, with a few multinucleated cells, (3) very limited fibroblastic stimulation, (4) notable absence of epithelioid nodules, (5) infrequent severe vascular changes, and (6) primary involvement of the entire fat lobule.

Although the etiology is unknown, the clinical pathologic features suggest that panniculitis is a syndrome rather than a disease entity. Examination of the patient and studies of blood cultures and of the nodules themselves give no information as to its origin. The clinical and pathologic features suggest that relapsing febrile nodular nonsuppurative panniculitis represents a special reticulo-endothelial response in which drugs, particularly iodine, may be a precipitating factor. The syndrome may result in death.

ABSTRACT OF DISCUSSION

DR. E. W. NETHERTON, Cleveland: Only a few reports of relapsing febrile and nodular nonsuppurative panniculitis have appeared in the American literature and most articles have been based on the observation of a single case. Dr. Bailey is to be congratulated on being able to report such a large number of cases presenting the characteristics of this syndrome. It is also of more than passing interest that this disease may occasionally prove to be fatal. This is the first report of a fatality attributed to this disease. Dr. Bailey referred to a case which I presented before the Cleveland Dermatological Society in 1933. The patient did not have the febrile reactions which have been observed in other cases. However, the dimpling of the skin following the disappearance of the nodules, the relapsing of lesions that were limited to the subcutaneous fat, and other characteristics that have been mentioned by Dr. Bailey were present. The pathologic changes did not show the acute leukocytic type of reaction that was first described by Weber but simulated the chronic type reported by Christian and others. The etiology of this syndrome is unknown. Two points may be emphasized as having some bearing on the etiology: (1) the high incidence of obvious foci of infection and (2) the frequent history of the ingestion of bromides and iodides either prior to or during the active phase of the disease. The distribution and

10 Gans Oscar. Histologie der Hautkrankheiten. Die Gewebsveränderungen in der kranken Haut unter Berücksichtigung ihrer Entstehung und ihres Ablaufs. Berlin: Julius Springer, 1 470-471, 1925.

11 Goeckerman W. H. Sarcoids and Related Lesions. Report of Seventeen Cases. Review of Recent Literature. Arch. Dermat. & Syph. 18: 237-262 (Aug.) 1928.

12 Bernheim-Karrer J. Ueber subcutane Fettgewebsnekrosen beim Neugeborenen. Ztschr. f. Kinderh. 55: 695-701, 1933. Mosberg G. and Behr E. Lipogranuloma and adiponecrosis subcutanea neonatorum. Nederl. tijdschr. v. geneesk. 79: 3050 (June 22) 1935. abstr. Arch. Dermat. & Syph. 34: 900 (Nov.) 1936.

13 Lee B. J. and Adair F. E. Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma. Ann. Surg. 72: 188-195 (Aug.) 1920. A Further Report on Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma. Surg. Gynec. & Obst. 34: 521-531 (April) 1922. Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma. Ann. Surg. 80: 670-691 (Nov.) 1924. Menville J. G. Fatty Tissue Tumors of the Breast. Am. J. Cancer 24: 797-806 (Aug.) 1935.

14 Avery Harold. Insulin Fat Atrophy. A Traumatic Atrophic Panniculitis. Brit. M. J. 1: 597-599 (March 30) 1929.

15 Stokes J. H. and Scholl A. J. Jr. A Case of Probable Paraffin Oil Tumor. Arch. Dermat. & Syph. 4: 50-54 (July) 1921. Mook W. H. and Wander W. G. VII. Camphor Oil Tumors. Arch. Dermat. & Syph. 1: 304-318 (March) 1920.

16 Farr C. E. Ischaemic Fat Necrosis. Ann. Surg. 77: 513-523 (May) 1923.

17 Makai Endre. Ueber Lipogranulomatosis subcutanea. Klin. Wchnschr. 7: 2343-2346 (Dec. 2) 1928. Strasser Ulrich. Ueber symptomatische posttraumatische Fremdkörpergranulome der Subcutis (Zur Frage der Lipogranulomatosis subcutanea). Klin. Wchnschr. 9: 987-989 (May 24) 1930. Siwe S. A. Zur Frage nach Adiponecrosis subcutanea (Scleroderma infantum) ihrer Klinik und Aetiologie. Jahrb. f. Kinderh. 141: 1-24 (Oct.) 1934.

18 Henschen K. Ueber subcutane Fremdkörpergeschwülste aus nicht resorbierten Kampferölinjektionen (Oelgranulome). Centralbl. f. allg. Path. u. path. Anat. 25: 417-418 (May 15) 1914. Abrikosoff A. Ueber die spontan auftretende Fettgewebsnekrose und Fettgranulome. ibid. 38: 542-546 (Nov. 15) 1926.

19 Barker N. W. General Classification of Diseases of Veins and Clinical Types of Thrombophlebitis. Proc. Staff Meet. Mayo Clin. 9: 191-194 (March 28) 1934.

20 Berner O. Subcutane Fettgewebsnekrose. Virchow's Arch. f. Anat. 193: 510-518 (Sept. 4) 1908. Heyde M. Zur Kenntnis der subcutanen Fettgewebsnekrose. Deutsche Ztschr. f. Chir. 109: 5 (May) 1911.

21 Lux Lydia. Subcutaneous Nodules Induced by the Inj. Streptococcus Viridans. Specificity of the Lesion and Origin of Polyblasts. Arch. Path. 17: 652-662 (May) 1934. Harlitz H. F. Lipogranuloma a Foreign Body Inflammation Often Successive. Acta chir. Scandinav. 76: 401-426, 1935.

22 Schwarzmann J. M. Sur la cytolatonecrose (etude expérimentale) cutanée et subcutanée traumatique expérimentale. Ann. de ch. 1934. Syph. 1: 476-494 (May) 1930.

location of the lesions and their character of relapsing suggests that the etiologic agent, whether chemical or of infectious nature, is blood borne and that the nodules are in reality metastatic lesions. In my case and in Dr Bailey's series, obvious foci of infection involved the teeth and tonsils and in case 1 of this series an otitis media developed during the course of the disease. Although a careful study failed to demonstrate an organism in the first case reported by Dr Bailey, the severity of the clinical manifestation, the type of febrile reaction and the fatal termination can best be explained in the presence of some type of systemic infection. There is a history of ingestion of bromides or iodides in all of Dr Bailey's cases. In the future the blood, urine and tissues should be examined for excessive amounts of iodine or bromine in cases with this type of panniculitis. Dr Bailey is correct in concluding that relapsing febrile nodular nonsuppurative panniculitis is a syndrome or a special reticulo endothelial response which may be precipitated by drugs, particularly iodine and bromine, and possibly by bacteria or their toxins that arise in foci of infection.

DR RICHARD J. BAILEY, Rochester, Minn. I appreciate Dr Netherton's discussion, particularly his emphasis on the possible etiologic role of infection. In respect to the changes described by Drs Weidman and Besancon in their discussion of erythema elevatum diutinum (*Arch Dermat & Syph* 20:593 [Nov] 1929), a careful histologic study of the sections from the cases reported did not show the particular vascular change which they described. Relapsing febrile nodular nonsuppurative panniculitis undoubtedly occurs much more frequently than a review of the reported thirteen cases would indicate. It is interesting that, in a general review of changes of the subcutaneous fat, both clinical and experimental, one finds that the reaction of this tissue is of three types: (1) a nonspecific response with fibrosis predominating; (2) a so called tuberculous response, with numerous epithelioid cells; and (3) a preponderantly phagocytic response. Weber-Christian disease apparently falls into the latter group.

THE GONORRHEA PROBLEM IN THE UNITED STATES

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The physician or health officer interested in the gonorrhea problem finds an extremely high incidence of the disease and great economic loss and human suffering due to it. He is puzzled not only by the relatively inadequate methods available for prevention and treatment despite the fact that the etiologic agent is known but also by the difficulty in determining the period of communicability and by the need for a practical diagnostic procedure which may be applied easily and as a routine. Without a knowledge of these essentials he encounters almost insurmountable difficulties in controlling the infection. The vast extent of the problem should serve as a challenge both to health officers and to physicians to develop a more effective control program.

INCIDENCE

The seriousness of the problem is indicated by recently completed surveys of the United States Public Health Service in which attempts were made to determine the number of cases of gonorrhea acquired each year in the United States.¹ It is estimated from the

assembled data that there are annually 1,037,000 cases of acute gonorrhea. In addition, there are a similar number acquiring the infection who annually are forced to seek treatment although the infection has passed the acute stage.

As any experienced health officer would, in a campaign against an infectious disease, an attempt has been made to determine the extent of the dissemination of this infection through the population. Such facts have

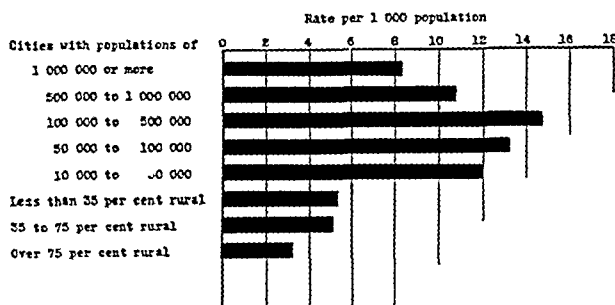


Chart 1—Annual incidence rates for acute gonorrhea per thousand of white population

been established as the relative frequency of the occurrence of gonorrhea in the two sexes and the two predominating races its geographic distribution, the age of persons acquiring the infection and the proportion of cases under the care of private practitioners as contrasted with those in public clinics. These surveys have been based on studies of all legal sources of treatment for approximately 10 per cent of the population of the United States. The geographic distribution of cases is general (chart 1). In cities of a million or more population, the annual rate for white persons who sought medical care during the acute stage of the infection was 8.3 per thousand and among Negroes 9.7 per thousand, as contrasted with a lower rate among the white in rural areas of 4.5 per thousand. Conversely, among the Negroes in rural areas the rate was 11.4 per thousand. It is interesting that the higher annual rates exist in cities of from 50,000 to 500,000 population while the lower rates occur in the metropolitan and rural areas. The ratio of acute to chronic infections in these areas indicate that proportionately one-half more white males than females seek treatment during the acute stage of gonorrhea. This neglect is far greater among the Negro than among the white females. For every Negro who seeks treatment in the acute stage, another delays coming to treatment until the infection is chronic, whereas among the Negro males two come to treatment in the acute stage for each one in the chronic stage, as shown in the accompanying table.

The effect of this delay on the part of the female in seeking treatment, added to the greater difficulty encountered in treating gonorrhea in the female, is resulting in an increased prevalence rate for women with chronic gonorrhea under the care of both the public clinic and the private practitioner. This evidence confirms the common belief that the female is the most frequent carrier of the disease.

AGE INCIDENCE

In a few of the later surveys, data were assembled with regard to the age of the patient on acquiring the infection. Based on these data the mean age for the white males is 29 years for the Negro males 24 years and for the white females 24 years. The age of the greatest number of infections is several years earlier

¹ Read before the Section on Urology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1935.

² Usilton, Lida J. Trend of Syphilis and Gonorrhea in the United States Based on Treated Cases. *Ann. Dis. Inform.* 16:147 (May) 1935.

in each instance. Sufficient data have not been accumulated to determine the mean age for the Negro female. Nearly half of the cases of gonorrhea were acquired before the age of 25. The effect of gonorrhea on the fertility of potential parents makes this early age of acquiring the infection more tragic. It is estimated that 26 per cent of the cases of gonorrhea occur

Annual Incidence Rates for Gonorrhea per Thousand of Population by Race Sex and Stage of Disease

	Males			Females			Total		
	Acute	Chronic	Total	Acute	Chronic	Total	Acute	Chronic	Total
White									
Cities with populations of									
1,000,000 or over	17.4	3.8	17.2	3.2	2.3	5.5	8.7	3.0	11.3
500,000-1,000,000	16.8	8.4	25.2	4.7	2.8	7.5	10.6	5.7	16.5
100,000-500,000	22.9	7.9	30.8	7.1	4.0	11.1	14.8	5.9	20.7
50,000-100,000	20.9	7.9	28.8	6.0	2.6	8.6	13.2	5.2	18.4
10,000-50,000	17.6	5.9	23.5	6.6	1.6	8.2	12.0	3.6	15.6
Mixed areas									
Less than 35% rural	8.5	3.3	11.8	2.1	1.3	3.4	5.3	2.3	7.6
35-75% rural	7.3	1.8	9.1	2.6	1.4	4.0	6.1	1.6	6.7
Over 75% rural	4.9	1.1	6.0	1.4	0.9	2.3	2.1	1.0	4.2
Total	11.7	4.3	16.0	3.3	1.9	5.2	7.5	3.2	10.6
Negro									
Cities with populations of									
1,000,000 or over	14.8	1.3	16.1	4.6	5.2	9.8	9.7	3.2	12.9
500,000-1,000,000	22.8	12.8	35.6	9.9	6.9	16.8	16.8	10.0	26.8
100,000-500,000	18.3	11.4	29.8	6.5	7.1	13.6	11.9	9.0	20.9
50,000-100,000	21.2	13.1	34.3	6.3	11.5	17.8	15.5	12.3	27.9
10,000-50,000	20.6	5.0	25.6	7.0	3.2	10.2	13.0	4.0	17.0
Mixed areas									
Less than 35% rural	15.5	4.4	20.0	7.0	6.9	13.9	9.7	7.1	16.5
35-75% rural	11.0	8.9	20.0	8.1	12.0	20.1	11.6	10.4	22.0
Over 75% rural	12.9	0.5	13.4	8.9	1.2	10.0	11.1	0.8	11.9
Total	18.4	9.4	27.8	7.3	7.2	14.5	12.8	8.3	21.0
Total									
Cities with population of									
1,000,000 or over	17.5	3.6	17.1	3.2	2.5	5.8	8.4	3.1	11.4
500,000-1,000,000	17.6	9.0	26.6	5.7	3.5	9.2	11.6	6.2	17.8
100,000-500,000	22.1	8.4	30.5	7.0	4.6	11.6	14.1	6.5	20.8
50,000-100,000	21.1	8.2	29.3	6.0	4.1	10.1	14.4	5.5	18.9
10,000-50,000	18.1	5.7	23.8	6.6	1.8	8.4	12.1	3.7	15.8
Mixed areas									
Less than 35% rural	8.5	3.3	11.8	2.1	1.3	3.4	5.3	2.3	7.6
35-75% rural	7.9	2.2	10.1	3.0	2.2	5.2	5.5	2.2	7.8
Over 75% rural	5.5	1.0	6.5	1.8	0.9	2.7	3.7	1.0	4.7
Total	12.1	4.6	16.7	3.5	2.2	5.8	7.5	3.4	11.3

in females, and of these 86 per cent are in the reproductive period between the ages of 15 and 44 years inclusive, that is, approximately 230,000 of the potential mothers of the United States acquire gonorrhea annually. Of the cases of gonorrhea, 74 per cent were in males and 97 per cent were in patients between the ages of 15 and 54 inclusive (chart 2). It is a well known fact that gonorrhea is one of the most frequent causes of sterility. Its exact importance is unknown. Norris² reports from the literature that from 30 to 50 per cent of the cases of sterility in women are due to gonorrhea and that 60 per cent of all gynecologic operations result from this disease. Gonorrhea is also a frequent cause of one-child sterility. Further evidence of the ravages of this infection is found in the extent to which the presence of gonococci in the genital tract of the pregnant woman endangers the health and life of both the mother and the offspring.

Williams³ states that gonococci not infrequently invade the genital tract and cause inflammatory reactions which lead to abortion. Kronig⁴ was one of the first to present bacteriologic proof that gonococci cause

puerperal infection. He claimed that he had been able to cultivate the gonococcus in fifty out of 179 puerperal cases. Williams³ found gonococci in approximately 9 per cent of his febrile patients when suitable culture mediums were used. Taussig and Stone⁵ state that from one tenth to one sixth of all rises of temperature in the puerperium are the result of gonorrheal infection. Norris² quotes various figures, believing the most conservative to be from 5 to 10 per cent in parturient women. Gonorrheal puerperal infection, though rarely fatal per se, is always serious.

PREVALENCE AND TREND

Data on the prevalence of gonorrhea were secured on twice as large a population group as were data on incidence. Legalized sources of treatment serving 2 per cent of the nation's population were included. Based on these data there are 493,000 cases of gonorrhea constantly under medical care in the United States. Resurveys were made in seventeen of the communities originally surveyed after a period of from three to six years in an effort to determine, if possible, the effectiveness of present day preventive and control methods. The resurveys indicated in general a decrease in the prevalence rates for gonorrhea. However these data may not necessarily be interpreted as representing an actual decline in the frequency of gonorrhea because simultaneous surveys made for syphilis indicated that the rate for syphilis in this period had increased 3 per cent. Syphilis and gonorrhea are comparable because these two diseases are contracted in a similar manner and there is twice as high an incidence rate for gonorrhea as for syphilis. Furthermore, it is a well known

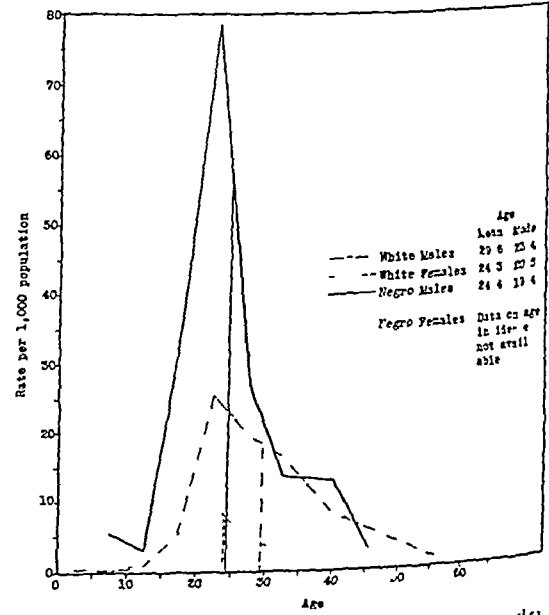


Chart 2.—Incidence rates per thousand of population for gonorrhea in Kansas, Nebraska and Richmond, Va.

fact that present day therapy is less effective in rendering the patient with gonorrhea noninfectious than the patient with syphilis.

It is therefore believed that the apparent decline in the rate for gonorrhea is due to failure to provide treatment for the average patient rather than to the actual control of the infection. This interpretation is based on the knowledge that throughout the resurvey period

2 Norris C C. Gonorrhea in Women. Philadelphia: W. B. Saunders Company, 1913. pp. 127 and 366.
3 Williams J W. Obstetrics. New York: D. Appleton & Co., 1930. p. 588.
4 Kronig. Centralblatt f. Gynak. 17: 157, 1893.

5 Taussig and Stone quoted by Williams³.

the curtailment of public health funds made it necessary for venereal disease clinics to limit the treatment of gonorrhea. In resurveyed communities in which facilities were more adequate the incidence rates for gonorrhea were proportionately higher, indicating that the number of infected persons under medical care is dependent on the availability of treatment facilities. Confirmation of this conclusion can be found in Nelson's report⁶ on the situation in Massachusetts, where efforts were made to maintain a venereal disease control program. He reports that over a ten year period, 1925-1934, a downward trend for syphilis was accompanied by an upward trend for gonorrhea in the rate of admissions both to public clinics and to private practitioners.

DECLINE IN GONORRHEA

That something can be done in the control of gonorrhea even with the methods at present available has been demonstrated by the medical corps of the armed forces of the United States. In the army, the annual admission rates for gonorrhea per thousand white enlisted men stationed in the United States has

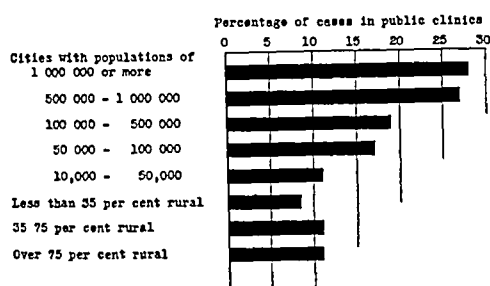


Chart 3—Percentage of cases of gonorrhea under treatment in public clinics

decreased 75 per cent from 91 per thousand in 1910 to 22 per thousand in 1934.⁷ There has been a steady downward trend throughout this period which the army authorities explain by the use of prophylaxis and compulsory physical examination. They anticipate further decrease with increased vigilance not only of medical but also of line officers. The navy likewise reports a reduction of 46 per cent in the admission rate for gonorrhea from 104 per thousand in 1910 to fifty-six in 1934. In the navy the ratio of gonorrhea to syphilis is decreasing. In 1910 it was 4.6 to 1 and in 1934 the ratio was 2.7 to 1.⁸

In a few of the European countries there is some evidence that there is a decline in the number of cases of gonorrhea, although in no instance is it as marked as the downward trend for syphilis. For example, in Great Britain the number of cases admitted for the first time to any clinic for treatment for gonorrheal infections in 1928 was 30,425 males, which number decreased to 27,506 in 1935, a decrease of 9.6 per cent, which is fairly constant throughout the eight year interval.⁹ This downward trend and apparent control of gonorrhea in males are absent for females in Great Britain.

In Copenhagen there was a very definite decline in the number of cases of gonorrhea under treatment. Although the data are not presented separately for sex, the total number of cases of gonorrhea in 1919 dropped from 8,783 to 4,572 in 1933. This decline was not

apparent in other parts of Denmark. On the contrary, the number of cases was slightly higher in 1933 than in 1919.¹⁰

In Germany a decline of 34 per cent in cases of gonorrhea from 1927 to 1934 has been reported.¹¹ The number of cases reported dropped from 22,700 to 14,900.

PRIVATE PRACTICE AND PUBLIC CLINICS

The percentage of gonorrhea under treatment in public clinics decreases with the decrease in the density of population. In cities of 1,000,000 or over, 28 per cent of the patients go to public clinics, but this proportion decreases to 11 per cent in cities of from 10,000 to 50,000. The latter figure is approximately that of rural areas (chart 3).

GONORRHEA AND OTHER COMMUNICABLE DISEASES

A comparison of the number of cases of gonorrhea with that of the other common communicable diseases indicates the enormity of the problem. In contrast with 1,037,000 cases of gonorrhea annually, enough patients to populate a large state, there were in 1935 only one third as many cases of tuberculosis, one fourth as many of scarlet fever, one twenty-seventh as many of diphtheria, one fifty-eighth as many of typhoid and a hundredth as many of poliomyelitis. Gonorrhea may be said to be the great epidemic disease of the human race, and little has been done about it. Yet an epidemic of any of the ordinary communicable diseases arouses immediate concern and demands the immediate institution of intelligent control measures.

SUMMARY

1 Annually in the United States at least a million persons acquire gonorrhea.

2 The incidence of gonorrhea is highest in cities of from 50,000 to 500,000 population, and lowest in metropolitan and rural areas.

3 The mean age of acquiring the infection is 29 years for the white male, 24 years for the Negro male, and 24 years for the white female. The age of highest frequency of infection is several years younger in each instance.

4 A fourth of the cases of gonorrhea occur in females, 86 per cent in the reproductive period of life. Thus approximately 230,000 potential mothers in the United States acquire gonorrhea annually.

5 There are constantly under observation and treatment 493,000 persons with gonorrhea in the United States.

6 There is no substantial evidence that gonorrhea is on the decline in the United States. However, the medical corps of the armed forces of the United States has demonstrated that something can be done in the control of gonorrhea with the methods at present available.

7 A few European countries have reported a decline in the number of cases of gonorrhea, although in no instance is it as marked as the downward trend for syphilis.

8 The percentage of gonorrhea under treatment in public clinics decreases with the decrease in the density of population.

9 Gonorrhea is much more prevalent than any other serious communicable disease.

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⁶ Nelson, A. A. The Decreasing Prevalence of Syphilis in Massachusetts. J. A. M. A. 106:105 (Jan 11) 1936.

⁷ Report of the Surgeon General U. S. Army 1931 p. 121 1935 p. 36.

⁸ Annual report of the Surgeon General U. S. Navy 1923 p. 63 1934 p. 34.

⁹ Twenty-first annual report of the British Social Hygiene Council (Incorporated) June 1 1935 March 31 1936 p. 19.

¹⁰ Control of Syphilis and Gonorrhea in the Scandinavian Countries and Great Britain. Am. J. Syph. Gonorr. & Ven. Dis. 20:7 (July 1936).

¹¹ Dornedden and Baland. Reichszählung der Geschlechtskranken 1934. 1. Beiheft zum Reichs-Gesundheitsblatt, 1935.

THE DIAGNOSIS OF GONOCOCCIC INFECTION IN THE MALE

AN EVALUATION OF LABORATORY METHODS

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The practice of modern medicine is becoming more and more dependent on laboratory aid for the diagnosis of infectious diseases. This is especially true in the diagnosis of gonococcal infection in the male, because genito-urinary symptoms similar to those caused by *Neisseria gonorrhoeae* may be caused occasionally by other bacteria. Not infrequently men become carriers of the gonococcus but show no symptoms of the disease. In this presentation the comparative diagnostic value of smears, cultures and complement fixation is considered.

THE SMEAR METHOD

Until recently the examination of smears for diplococci, tinctorially and morphologically typical of the gonococcus, constituted the chief laboratory method for diagnosing gonococcal infection. The inspection of smears properly stained by Gram's method has many merits. It is comparatively simple and inexpensive. Results of the examination are available within a few minutes after the specimen has been obtained. Smears on glass slides are easily transportable. Furthermore, the technique is a much less involved procedure than the cultural method and may be employed in the physician's office, provided the physician or a qualified technician is cognizant of the intricacies of staining by Gram's method. It is unnecessary to emphasize the unreliability of smears when stained with methylene blue. However, the examination of a smear stained with methylene blue, prepared from a typical case of acute gonococcal urethritis, usually presents such a characteristic picture that few errors arise.

The smear method is much less dependable in chronic cases, when the number of gonococci in the inflammatory exudate has decreased and secondary invading bacteria predominate. Some observers believe that the gonococcus becomes morphologically and tinctorially atypical and difficult to recognize in the latent stage of the disease.

THE CULTURAL METHOD

During the past three years the development of a dependable cultural method has demonstrated that the examination of smears properly stained by Gram's method fails to reveal many cases of gonococcal infection. Although many bacteriologists have successfully cultivated the gonococcus since its isolation in 1885 by Bumm,¹ a routine cultural method suitable for diagnosis was not available until McLeod and his associates² in 1934 introduced the use of chocolate agar and emphasized the value of reinforcing air with carbon dioxide for isolating the gonococcus. In addition, they described an oxydase test for identifying colonies of the gonococcus in mixed cultures. Later, Leahy and Carpenter³ modified McLeod's method and after employing it as a routine for three years, concluded

that it was the most reliable available procedure for diagnosing gonococcal infection. The technique is comparatively simple and may be used in any modern public health laboratory.

A diagnosis based on the isolation of the gonococcus makes possible its unmistakable identification and eliminates the defects inherent in the smear method. A report based on the recovery of the micro organism in culture is acceptable to the courts. Furthermore the use of a cultural method is necessary to evaluate accurately the results of any therapeutic procedure.

THE COMPLEMENT FIXATION TEST

The reliability of the complement fixation test is questioned by many serologists and the majority of urologists in America. Price⁴ of London as well as many other European serologists however, have much confidence in the test but the use of their methods in this country has given disappointing results. There are those who are pessimistic about the possibility of ever evolving a complement fixation test suitable for the routine diagnosis of gonococcal infection. It is evident that the various techniques now employed in the United

Table showing Results from Eight Laboratories of Complement Fixation Tests for Gonococcal Infections on Four Patients

Patient	Date Blood Taken	Laboratory							
		1	2	3	4	5	6	7	8
254	1/19/37	—	—	+	±	+	+	±	—
	4/24/37	+	—	+	±	+	+	—	—
96†	5/27/37	+	+	2	±	+	+	+	Slight positive
	4/20/37	2	3	4	±	+	+	+	Slight positive
	5/18/37	2	3	3	1	2	3	3	Positive
215‡	4/26/37	—	3	—	—	4	—	—	—
276	4/16/37	—	4	—	+	4	±	—	—

* History and symptoms of gonococcal infection (chronic anterior urethritis). Smears and cultures were positive when blood was taken.

† No symptoms but history of gonorrhea in September, October and November 1937. Smears and cultures were negative when blood was taken.

‡ No history or symptoms of gonococcal infection. Smears and cultures were negative when blood was taken.

States should be studied critically. The results from the use of our best procedures cannot, in many instances, be correlated with the patient's bacteriologic and clinical examinations. Several investigators have concurred in the opinion that the complement fixation test is especially useful in differentiating gonococcal arthritis from arthritis caused by other agents. It is undoubtedly more valuable in this type of infection than in the other forms of the disease. In a recent report Warren, Hinton and Bauer⁵ conclude that, "in cases in which the history is consistent with a diagnosis of gonorrheal arthritis, a positive test will be correct in 90 per cent of the cases." Furthermore, they state, "Of 239 cases representing other types of arthritis, 91.6 per cent gave consistently negative reactions."

A cooperative investigation by eight laboratories is now in progress to compare the results of complement fixation tests on the same specimens of blood from patients so isolated that reinfection cannot occur. The serologic observations will be correlated with the clinical

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¹ Bumm, *Deutsche med. Wochenschr.* 11: 508, 1885.
² McLeod, J. W., Coates, J. C., Huppold, F. C., Priestley, D. P. and Wheatley, B. J. *Path. & Bact.* 39: 221 (July) 1934.
³ Leahy, A. D. and Carpenter, C. M. *Am. J. Syph. Gonorr. & Ven. Dis.* 20: 347 (July part 1) 1936.

⁴ Price, J. N. O. *London County Council* 1933 No. 2995.
⁵ Omond, R. W. and Oliver, J. O. *Brit. J. Ven. Dis.* 5: 1 (Oct.) 1929.
Green, F. *Canad. M. A. J.* 28: 289 (March) 1931.
Myers, W. K. and Keefe, C. S. *New England J. Med.* 211: 11 (July 19) 1934.
⁶ Warren, C. F., Hinton, W. A. and Bauer, Walter. *Comp. Fixation Test as a Diagnostic Aid* J. A. M. A. 108: 1241 (April 10) 1937.

and bacteriologic observations, especially with the results of the culture method. This is the first attempt on a large scale to compare the technic in use in the United States. It is hoped that this study will aid in standardizing the test. Furthermore, research on improving the specificity and sensitivity of the test is in progress in several laboratories. It is evident that the renewed interest in this test will provide the information required to solve many of its present shortcomings.

The data in the accompanying table illustrate the present unreliability of the complement fixation test by showing the many discrepancies that occurred in tests made by several serologists on samples of blood from four adult male patients selected from a group of 300 patients. Fifty cc of blood was collected from each patient, after which a 5 cc specimen was forwarded to each laboratory for examination. Patient 85 had a chronic gonococcal urethritis of several months' duration. Smears and cultures were positive at the time the blood was tested. Patient 96 had a history of gonorrhea eighteen months prior to the examination of his blood. No symptoms were present and smears and cultures were negative when the blood was collected. Patients 215 and 216, because of mental and physical disabilities, could not have been exposed to a gonococcal infection except at the time of birth. Neither showed symptoms of the disease, and smears and cultures were negative when specimens of the blood were taken.

The following data will illustrate further the unreliability of the present serologic methods. The comparative results from the use of the complement fixation test and the smear and cultural methods on ninety-two patients with a history and symptoms suggestive of gonococcal infection are shown in the chart. The results from similar examinations on twenty-eight patients of the same character but with no history or symptoms of a genito-urinary infection, are likewise shown.

Complement fixation tests on eighty of the ninety-two infected patients gave reactions varying from a plus-minus to a four plus. In this group more positive diagnoses resulted from the serologic examination than from either the cultural or the smear method. Obviously, however, these results are questionable, because twenty of the twenty-eight patients noninfected at the time of examination gave positive reactions. The history on some of the patients in the latter series may have been unreliable but it is unthinkable that 71 per cent were undependable and that no false positive reactions were obtained.

Cultures from either the urethral discharge or the prostatic exudate were positive in forty-six of the ninety-two cases while smears stained by Gram's method and examined by a bacteriologist with extensive experience were positive in only thirty-five cases. Twelve per cent more cases were diagnosed by cultures than by smears.

COMMENT

The data presented in this brief review show the comparative value of the complement fixation test, the cultural method and the smear method for the diagnosis of gonococcal infection in the male. The complement fixation test gave a positive reaction in 87 per cent of ninety-two cases presenting a history and symptoms of the disease. Its true value, however, becomes greatly diminished in the light of finding 71 per cent positive reactions in a group of twenty-eight patients with neither a history, symptoms nor bacteriologic evidence of the disease. The latter group, however, is small. In

a few instances false positive tests have occurred in patients with meningococcal infection. Likewise the use of gonococcus vaccines, or those incorporating other gram-negative cocci seriously interferes with the interpretation of a positive test. Further studies on gonococcus antigens are necessary to improve the specificity of the complement fixation test. The limitations of many of the present techniques make its use questionable even when correlated with the clinical and bacteriologic changes.

The superiority of the culture method to the smear method, and especially to the complement fixation test, is obvious from the data presented. The diagnosis of 12 per cent more positive cases by culture than by smears is significant. In females, however, approximately twice as many positive diagnoses are made by cultures as by smears. The cultural method gives no false positive diagnoses and, furthermore, is a reliable test for cure. It has not as yet become as useful an aid to the general practitioner as is the cultural method for the diagnosis of diphtheria. At the present time its availability is somewhat limited to hospitals and vene-

ON 92 PATIENTS WITH HISTORY AND SYMPTOMS OF GONOCOCCIC INFECTION	
	POSITIVE BY COMPLEMENT-FIXATION TEST—80 OR 87%
	POSITIVE BY CULTURES—46 OR 50%
	POSITIVE BY SMEARS—35 OR 38%
ON 28 PATIENTS WITH NO HISTORY OR SYMPTOMS OF GONOCOCCIC INFECTION	
	POSITIVE BY COMPLEMENT-FIXATION TEST—20 OR 71%
	POSITIVE BY CULTURES—0
	POSITIVE BY SMEARS—0

Results of complement fixation tests, cultures and smears on ninety-two patients with history and symptoms of gonococcal infection and on twenty-eight patients with no history or symptoms of gonococcal infection.

real disease clinics where well equipped laboratories are located so that specimens can be cultured within six or eight hours after collection. A few city health departments have introduced the cultural method and it will soon be possible to judge the value of this new diagnostic procedure under routine conditions.

It should be emphasized that neither the cultural method nor the smear method should be used alone, but as supplementary procedures. Although more positive diagnoses are obtained by the cultural method, smears occasionally reveal typical gonococci, which for unknown reasons fail to grow.

CONCLUSIONS

The cultural method is the most reliable procedure for the diagnosis of gonococcal infection, exceeding both the smear and complement fixation methods. The isolation of the gonococcus makes the diagnosis unquestionable and a report based on this finding constitutes irrefutable evidence in court. The smear method, however, has many advantages over the cultural method, because of such features as its simplicity, inexpensiveness and rapidity. It fails to reveal as many positive cases as the cultural method and in some instances, false positive results are reported, owing to

the inability of the examiner to differentiate the gonococcus from other bacteria. Furthermore, it is impossible to distinguish viable from nonviable gonococci.

The present methods for making complement fixation tests are unsatisfactory and frequently give false positive results.

ARTIFICIALLY INDUCED FEVER FOR THE TREATMENT OF GONOCOCCIC INFECTIONS IN THE MALE

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With the advance of chemotherapy, numerous drugs have been developed and used for the treatment of gonorrhea with the hope that a preparation might be found which was capable of quickly destroying the gonococcus without injuring the mucous membrane of the male urethra. The inadequacy of chemical treatment, in all probability, has been due to the anatomic structure of the male urethra and to the tendency of the gonococcus to become "fast" to germicides used locally. Search for a specific drug for intravenous use has likewise been disappointing. Comparatively recently, however, two related products, prontosil¹ and prontosil (sulfanilamide), have been heralded by a few investigators as specifics for meningococcal and gonococcal infections. While we have been using sulfanilamide in our clinic for some time, we feel that further studies must be made before its clinical value can be definitely determined. Antigonococcus serums, vaccines, filtrates, bacteriophages and the like have appeared to be useful for the treatment of certain cases of the disease but have not been successful as a routine procedure.² The local application of heat in the form either of hydrotherapy or of electrotherapy, while of great therapeutic value, cannot be relied on to produce an effective, consistent and rapid cure.

Cognizant of the disappointments that have so frequently befallen those who have enthusiastically advocated new methods for the cure of gonorrhea, we shall describe our experiences and present the results obtained during the last six years with the use of general fever for the treatment of acute and chronic gonococcal infection in the male. It is to be emphasized that the method described for inducing fever is not practicable for universal use but is strictly a hospital procedure requiring at least a seven day hospitalization for the ambulatory patient. It demands the services of full time day and night nurses specially trained to care for patients undergoing such treatment. Since the average length of fever treatments was 14.8 hours, as determined by the thermal death time, more time is demanded of the physician than is reserved each day for office practice. In addition

to requiring special nursing care, it is necessary that the patient be seen at frequent intervals by a physician, who must be available on short notice.

EXAMINATION OF PATIENT, PREPARATION FOR FEVER THERAPY, AND CARE DURING AND AFTER TREATMENT

A patient is never treated until after he has received a thorough physical examination and special preparation for fever therapy. First, a genito-urologic examination is made in order to determine the extent and degree of infection. Smears and cultures are made of the urethral exudate taken after the end of the penis has been washed with soap and water and a 1:4,000 solution of mercuric oxycyanide has been applied. The exudate for culture is collected on a sterile swab and suspended in 1 cc of Douglas broth. If, after the urethra is stripped, insufficient or no exudate is present, the first two or three drops of urine are voided into 1 cc of broth for culturing. In chronic cases in which an examination of the prostatic secretion is indicated, the patient is first instructed to distribute the contents of his bladder, as equally as possible, into three glasses. The glans penis is then thoroughly cleansed with green soap followed by the application of a 1:4,000 solution of mercuric oxycyanide, after which the prostate is massaged to obtain material for microscopic examination and culture. The secretion is permitted to flow into a test tube containing 1 cc of broth. A smear is also made from the prostatic exudate at the meatus. The urethra is never irrigated with an antiseptic solution before prostatic massage, because the presence of the chemical might inhibit growth of the gonococcus. The specimens are then submitted to the bacteriology laboratory for examination according to the technique described by Leahy and Carpenter.³ A specimen of blood is also obtained as a routine for complement fixation tests for syphilis and gonococcal infection.

When fever therapy is contemplated, the patient is admitted to the hospital. Further laboratory studies are made, including a complete blood count, a roentgenogram of the chest, an electrocardiogram and a chemical examination of the blood. A twenty-four hour specimen of urine is examined for specific gravity, volume and total sodium chloride. The details of the treatment are explained to the patient or to his guardian and a signed permit for such therapy is always obtained.

Special attention is given to the patient's intake of sodium chloride before he is subjected to the fever therapy. Marked losses of salt may occur during the treatment, and it is essential therefore that the tissues be well supplied before the fever is initiated in order to maintain a normal chloride and water balance. In certain instances it is deemed necessary to give the patient from 10 to 15 Gm of salt during a twelve or twenty-four hour period prior to the treatment. On the evening preceding the fever, the patient is given a cleansing enema. At 6 a. m. he receives the usual hospital breakfast and half an hour later a sedative which is usually from 8 to 15 cc of paraldehyde in grape juice. The patient is brought to the fever clinic at 7 o'clock where he is transferred to the radiant energy cabinet.

Restraints are set in place and the bulb of the rectal thermometer is inserted into the rectum. Cultures and smears are again made from the urethral discharge when present, or from the first voided urine, a

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¹ Sulfanilamide and Related Compound. Council report J. A. M. A. 108:1888 (May 29) 1937.

² Thomas, Ruth B., and Bayne-Jones, Stanhope. Report of the Committee for Survey of Research on the Gonococcus and Gonococcal Infections. *Am. J. Syph. Gonorr. & Ven. Dis.* 20:9 (Jan. supp.) 1936.

³ Leahy, A. D., and Carpenter, C. M. The Diagnosis of Gonococcal Infections by the Cultural Method. *Am. J. Syph. Gonorr. & Ven. Dis.* 20:347 (July, part 1) 1936.

check on the cultures made previously. A specimen of blood is collected and examined for nonprotein nitrogen, sugar, chloride content and icteric index. These observations constitute a basis for comparison after treatment. The rectal temperature is elevated to 41.5 C (106.7 F) and is maintained at this level for a period equal to the thermal death time of the strain of gonococcus isolated from the patient. To maintain a normal water balance, the patient is given from 200 to 350 cc of fluid each hour. If sweating is excessive, from 5 to 15 Gm of sodium chloride is given by mouth at intervals throughout the treatment. In the late fall and winter in this climate the use of supplementary chlorides is less necessary than in summer, even during a very long treatment. The pulse, respiration and temperature are observed and recorded every ten minutes. The blood pressure is taken at least once each hour and more frequently if deemed advisable. When paraldehyde narcosis is inadequate, it is supplemented with from 10 to 20 cc of whisky per hour.

The patient is under the constant supervision of a nurse specially trained for this type of therapy and is visited every hour by the physician. At the termination of the fever a specimen of blood is again taken for comparison with the results of the previous analysis. The cabinet is opened and the patient's temperature is allowed to fall. He is returned to his room after the temperature has receded to 38 C (100.4 F), if his general physical condition is satisfactory.

If the therapy is successful, all clinical symptoms disappear and cultures for the gonococcus are negative at the end of treatment. The urethral discharge usually subsides before the termination of the treatment. A small amount of whitish, mucoid urethral discharge may be observed within twenty-four hours, but no yellow pus is present. Cultures and smears are taken approximately twenty-four hours after treatment and again on the second and third days. A convalescent period of three days is usually sufficient, regardless of the length of the fever treatment. If the patient's clinical condition is satisfactory at this time, he is referred to his personal physician for follow up. Further urologic treatment is necessary in nearly all cases, except in early acute anterior urethritis in which no urethral injury, such as roughening or stricture formation, has occurred. The elimination of the gonococcus from the prostate and seminal vesicles by fever therapy is seldom followed by the complete disappearance of the secondary infection without the accepted routine treatment for such complications. Whenever possible, it is advisable that the patient have a rest period of about three weeks before an examination is made to discover the extent and character of any resulting sequelae.

DETERMINATION OF THE THERMAL DEATH TIME OF THE GONOCOCCUS

When a pure culture of the gonococcus has been isolated from the specimen submitted for bacteriologic examination, the thermal death time of the strain is determined.⁴ Observations have indicated that 41.5 C (106.7 F) is the highest temperature the body can safely tolerate for intervals of from eight to twenty-four hours. The duration of the period of fever is based on the thermal death time of the individual strain of the gonococcus at this temperature. The procedure employed is essentially the same as that previously

described.⁵ Sealed glass vials containing from 1.5 to 2 cc of a dextrose-ascitic fluid-blood broth culture of the gonococcus are immersed in a constant temperature water bath set at 41.5 C. A vial is removed at hourly intervals and its contents are cultured for viability. The hour after which no growth occurs is considered to be the thermal death time. Experience has shown that it is unnecessary to make routine hourly observations except from the eighth to the twenty-fourth hour after the immersion of the culture in the bath. Examinations made on 250 strains of gonococci have shown that the thermal death time at 41.5 C varies from six to thirty-four hours. The isolation of the gonococcus from the patient and the determination of its thermal death time require from seven to ten days. If contamination occurs during the examination the procedure must be repeated. As a rule ambulatory patients are not admitted to the hospital until after the test has been completed.

CONTRAINDICATIONS TO FEVER THERAPY

There are several contraindications to the use of fever for the treatment of gonococcal infections. Patients with electrocardiographic evidence of myocardial damage or heart block of any degree do not tolerate such therapy well. Mild valvular damage with full compensation, however, is not necessarily a contraindication in patients under 30 years of age. Patients more than 40 years of age should not be treated for fifteen hours or longer unless a careful study is made of the cardiovascular system and especially of the peripheral circulation. Patients with chronic alcoholism should not be treated by this method. Frequently patients are admitted to the hospital with an acute infection after an alcoholic debauch, mentally and physically prostrated. Nonalcoholic patients occasionally show signs of toxemia from a gonococcal infection such as pallor, restlessness, anorexia, insomnia, anemia, marked sinus arrhythmia and dyspnea on exertion. It is also important to exclude those rendered susceptible to heart prostration by a low salt intake during the summer months or by acute respiratory infections, and especially to exclude those with active pulmonary tuberculosis.

SEQUELAE OF THE TREATMENT

Of a total of 283 patients with gonococcal infections subjected to fever therapy, jaundice and severe nausea and vomiting have developed in fifteen. Four cases in which symptoms were present are reported in this paper. In two of them also hematuria was present, which disappeared within a week without further sequelae. These symptoms occurred only during the warm months of the year. The icteric index in some cases rose to as high as 18 by the third day (the normal value is from 4 to 8). There was a concurrent rise in the nonprotein nitrogen to double its normal value, but the latter subsided more rapidly than the icteric index. The blood sugar usually was unchanged. The serum chlorides either remained at a low normal or dropped below the normal content. They rapidly returned to normal, however, on the administration of sodium chloride subcutaneously, or by mouth if the patient did not vomit. The jaundice likewise responded favorably to the administration of from 15 to 20 Gm of sodium chloride within twenty-four hours. It subsided in from three to five days when the carbohydrate as well as the saline intake was increased. A discussion of these

⁴ Carpenter, C. M., Bork, Ruth A., Mucci, L. A. and Warren, S. L. The Thermal Death Time of Neisseria Gonorrhoeae in Vitro with Special Reference to Fever Temperature. *J. Lab. & Clin. Med.* 18: 941 (July) 1933.

⁵ Bishop, R. W., Lehmann, Emma and Warren, S. I. A Comparison of Three Electrical Methods of Producing Artificial Hyperthermia. *J. A. M. A.* 104: 910 (March 16) 1935.

details will be published in subsequent papers. Herpes labialis developed in approximately 60 per cent of the patients.

RESULTS OF FEVER THERAPY ON SIXTY-FOUR PATIENTS

We have included in this series only those cases in which positive clinical changes were confirmed by a positive smear and culture within the twenty-four hours before treatment was instituted. This made it necessary to exclude many cases in which such information was wanting as well as cases diagnosed by their clinical signs and symptoms only. Only those cases were considered cured in which the physical changes, the three glass test of the urine, and the smears and cultures from the urine, the urethra and the prostatic secretion were consistently negative for one month or longer after the fever therapy. The majority of the cases were observed for at least three months. Some have been under observation for a period of three years. In those cases in which treatment failed, symptoms accompanied by positive bacteriologic changes usually reappeared from one to three days later.

The practice of subjecting the patient to a fever equal in length to the thermal death time of the strain of gonococcus harbored by the patient quite naturally evolved from our failure to cure a large percentage of the gonococcal infections by a single fever of short duration. For the purpose of presentation, the cases have arbitrarily been divided into five groups.

GROUP 1—*Three patients treated with one session of fever at 41.5 C for less than five hours.*

The thermal death time of the gonococcus from one patient was nineteen hours but that from the other two was not determined. The duration of fever was two, three and four and one half hours. The patient given four and one half hours was considered 'cured'—that is, smears and cultures were negative after treatment and remained so during the follow-up period. Treatment was not satisfactory in the other patients since positive smears and cultures were obtained from both. In the case of the two hour treatment the patient refused to cooperate and treatment was discontinued. Fever was terminated in the other patient after three hours because of marked cyanosis. The thermal death time of the gonococcus from the patient who was 'cured' was not determined.

Obviously no conclusions can be drawn from such a small group. In a large series of patients a few would undoubtedly be cured by a fever of very short duration. This would be especially true of the acute case which had almost run its clinical course and in which recovery probably would have occurred without treatment. Every effort was made, however, to exclude such cases from this series.

GROUP 2—*Seventeen patients treated with one five hour period of fever at 41.5 C.*

Only three of seventeen patients who received five hours of fever at 41.5 C at one sitting were cured. Two of the patients reported as cured harbored strains of the gonococcus with thermal death times of fifteen and twenty-two hours respectively, while in the third the thermal death time of the strain was undetermined. No explanation can be offered as to why cures were obtained in these three cases while failure resulted in the fourteen others unless it was because of a difference in the individual patient's resistance against the disease. This defense mechanism, however, cannot as yet be accurately measured. It is of interest to note the long

period of local treatment (from one to four months) required to cure those patients who failed to respond to one five hour session of fever at 41.5 C.

GROUP 3—*Four patients treated with two sessions of fever at 41.5 C of duration shorter than the thermal death time.*

Since a single five hour session of fever failed to cure many patients the use of two or more short fever treatments of from five to ten hours' duration was tried. Favorable reports of employing a series of short periods of fever for the treatment of gonococcal infections have been made by Hensch, Slocumb and Popp,⁶ Bierman and Horowitz,⁷ and Simpson,⁸ as well as by several other investigators.

In three of the cases in which the first treatment failed subsequent fever therapy proved to be of no value. One patient suffering from urethritis and arthritis was cured of the urethritis after a five hour session of fever while the arthritis responded to a second treatment of six hours. There is a possibility, however, that in this instance the two treatments supplemented each other. Although cures may be effected by repeated sessions of fever of short duration our interests have been concerned chiefly with the use of a single session of fever equal in duration to the thermal death time of the strain of the gonococcus isolated from the patient. This principle in our opinion is the rational basis for treating infectious diseases with induced fever. This is especially true in gonococcal infections because of the thermolability of the gonococcus at fever temperatures.

GROUP 4—*Nine patients treated with a session of fever at 41.5 C longer than five hours but shorter than the thermal death time.*

Only two of nine patients so treated were cured. One of them received a fourteen hour session of fever which was six hours less than the thermal death time. The other patient whose strain of gonococcus had a thermal death time of twenty-seven hours was cured by a fifteen hour session of fever. Three other patients who failed to respond to fever therapy recovered after four weeks of local chemical treatment. That they may have received some benefit from the fever is evidenced by the shorter period of time required to effect a cure by subsequent chemical treatment.

GROUP 5—*Thirty-one patients treated with one session of fever at 41.5 C approximately equivalent to the thermal death time.*

Included in this group of thirty-one cases are five in which the duration of treatment was from one half to two hours shorter than the thermal death time. The method of determining the thermal death time of the gonococcus is not without error. A variation of from one to two hours has occurred in repeated tests on the same generation of some of the strains. Because of a slight variation in the thermal death time it was found advisable whenever conditions permitted to subject the patient to fever for one hour longer than the reported thermal death time.

The results obtained in this group of thirty-one patients were the most satisfactory. There were only two uncomplicated cases of acute anterior gonococcal urethritis. The remaining twenty-nine presented one or

6 Hensch P S, Slocumb C H and Popp W C. Fever Therapy Results for Gonorrheal Arthritis, Chronic Infectious (Atrophic) Arthritis and Other Forms. J A M A 104: 1779 (May 18) 1935.
7 Bierman William and Horowitz E A. Treatment of Gonorrhea in the Female by Means of Systemic and Additional Local Heat. J A M A 104: 1797 (May 18) 1935.
8 Simpson W M. Artificial Fever Therapy of Syphilis and Gonococcal Infections. Brit J Ven Dis 12: 131 (July) 1937.

more complications that constituted difficult problems of treatment. Twenty-five, or 81 per cent, of the patients were cured. Failure occurred in six instances. Two of these patients responded to simple local treatment within two weeks after the fever and the third was cured in three weeks. In these three cases it was evident that the fever therapy either increased the resistance of the patient or decreased the virulence of the gonococcus, so that local treatment resulted in a rapid cure. One patient whose strain of gonococcus had a thermal death time of eleven hours, failed to respond to a five hour treatment but later was cured by fifteen hours of fever.

The failure to cure six, or 19 per cent, of the patients in this group was due possibly to the fact that each was infected with two or more strains of the gonococcus. Should this premise be true, the determination of the original thermal death time was evidently made on the least heat resistant strain. Thermal death time determinations on five of the six strains recovered from the patients after the session of fever indicated this.

One death occurred.

A boxer, aged 22, in good physical condition presented a simple anterior urethritis of three weeks duration. The strain of gonococcus isolated from the urethral discharge had a thermal death time of twenty-four hours. On physical examination the patient was normal except for the presence on the right temple of an unhealed wound produced by a blow received during a recent boxing match. The patient was given 8 cc of paraldehyde one-half hour before the fever treatment and whisky in amounts of 5 cc at approximately hourly intervals totaling 184 cc for the twenty-four hour period during which time he was subjected to a temperature of 41.5 C. It was noted that the ingestion of small amounts of whisky produced a state of complete narcosis almost immediately thereafter. He stubbornly refused to drink the usual allotment of water (from 200 to 300 cc an hour) during the last five hours of treatment. Very little sweating occurred during the last half of the treatment which in the light of our present knowledge is an indication for termination of the treatment or for an infusion. However 1500 cc of 0.85 per cent saline solution and 5 per cent dextrose was given by infusion at the end of the treatment. The blood serum chlorides were 542 mg per hundred cubic centimeters and the nonprotein nitrogen 63 mg at that time. The patient reeked of paraldehyde and whisky but could be aroused. Ten hours later another 1500 cc infusion was administered and he drank some water spontaneously but refused food. No urine was voided.

Twenty-two hours after the termination of the twenty-four hour fever treatment, the nurse observed a sudden change in the patient. The pulse was feeble and the skin dry. It was impossible to arouse the patient for thermal observation. He was given 1 cc of caffeine and 0.5 cc of epinephrine subcutaneously and intravenous injections of saline and dextrose solution were attempted but were unsuccessful even after direct exposure of the vein. The patient responded to the usual oxygen-carbon dioxide mixture at first but soon pulmonary edema developed and he died shortly thereafter (twenty-six hours after the end of the period of fever). There was a terminal rise of 2 degrees C (3.6 F) in the rectal temperature. Autopsy disclosed moderate dehydration of all body tissues. There was frothy material in the bronchi and trachea and a very mild cloudy swelling of the liver. No hemorrhages were observed in the adrenals or other tissues. Permission to examine the brain could not be obtained.

Several factors probably contributed to this death. 1 The patient a professional boxer, was "trained down fine," and was further dehydrated and depleted of chlorides by the fever. Therefore the fluids given during the treatment were inadequate. 2 The patient had a marked intolerance to whisky (as little as 5 cc was a toxic dose). This was later verified by the family, who stated that he could not tolerate more than one cocktail and "never drank." 3 It is our belief that caffeine and

epinephrine were distinctly contraindicated in this case. Undesirable reactions have occurred from their use in other cases with low blood pressure or collapse after fever therapy. 4 A possible cranial lesion, such as pachymeningitis, resulting from his occupation may have been present and contributed to his death, but this could not be proved.

This is the only fatality that has occurred in a group of 283 patients (male and female) treated for gonococcal infections. Nevertheless we are convinced from further study of the water and chloride balance that it is possible to administer these prolonged fevers safely. Evidently this fatality was due in part to our inability at the time to recognize the incipient symptoms of dehydration in time to prevent it.

Because a number of cases which had previously resisted chemical treatment responded favorably to it after ten or fifteen hours of fever therapy, it seems advisable to discontinue treatment at the end of fifteen hours regardless of the length of the thermal death time, when there is the slightest cause for apprehension for the safety of the patient.

COMMENT

In an attempt to evaluate correctly fever treatment of gonococcal infections in 105 male patients, rather exacting requirements were specified. In only sixty-four cases was clinical evidence of the disease substantiated by a positive smear or culture within twenty-four hours of treatment. Failure of such substantiation resulted in the elimination of forty-one cases from the series, although very satisfactory clinical results were obtained. Every case reported as cured was observed for many weeks, and in most instances several months after treatment. Many of the patients have resumed marital relations without evidence of recurrence or infection in the partner. The decision to base the duration of fever treatment, wherever possible, on the thermal death time of the individual's strain of gonococcus was made when a high percentage of failures occurred after either one or a series of short sessions of fever was administered. Furthermore repeated treatment of five hours' duration proved less economical in certain cases, and not infrequently the patients refused to continue the therapy after two or more failures.

Fever therapy is indicated in those cases in which other types of therapy have proved to be of no value. It may well be considered in cases that fail to respond to the usual general and local therapeutic measures. Fever has proved to be a valuable asset in the treatment of the various complications resulting from gonococcal infections. In this series several patients having acute posterior urethritis, prostatitis and unilateral epididymitis were cured and the possibility of bilateral epididymitis and sterility was thus prevented. Gonococcal arthritis is most effectively treated by fever. Likewise in gonococcal infections of the kidney, a relatively rare but frequently most difficult complication to treat locally, fever therapy should be of special value. Artificially induced fever should be considered in the treatment of patients who refuse to cooperate while under local therapy and thereby not only prolong their own infection but continue to spread the disease. In married people in whom the welfare of the home and the prevention of domestic complications are dependent on a rapid cure, fever is frequently indicated.

This type of fever therapy should not be entered into lightly by either the physician or the patient. The physician should be certain in each case that its use is warranted and that the patient is qualified physically for

the treatment. When the treatment is to be relatively long, and in most instances it is (the average thermal death time in this series was 14.8 hours at 41.5 C), the patient should be advised that it is not devoid of risk and may be exhausting and unpleasant. At the present time, at least in all cases in which the thermal death is more than fifteen hours, fever therapy should not be attempted until all other therapeutic measures have been tried and found to be unsatisfactory. This statement is prompted by the fact that one of our patients suffering from an acute anterior urethritis died after a twenty-four hour fever treatment.

CONCLUSIONS

1 The results obtained in sixty-four male patients treated by artificially induced fever for gonococcal urethritis and its complications indicate that it is a valuable therapeutic procedure.

2 Cures resulted in seven of the thirty-four cases of gonococcal infections in which either a single session of fever or repeated sessions at 41.5 C shorter than the thermal death time were given. They were usually of five hours' duration.

3 In thirty-one cases of gonococcal infection in which the patients received treatment equivalent to or greater than the thermal death twenty-five, or 81 per cent, were cured by a single session of fever at 41.5 C.

4 This type of fever therapy is a procedure requiring trained personnel and is suitable for use only in a hospital. It is not devoid of risk, as is indicated by the occurrence of one death in 283 cases of gonococcal infections treated during the past six years.

5 Fever therapy is indicated in persistent and complicated cases of gonococcal urethritis in which other types of treatment have failed.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DR. VONDERLEHR AND LIDA J. USILTON,
DR. CARPENTER, AND DRs. WARREN, SCOTT
AND CARPENTER

DR. WILLIAM BIERMAN, New York. That artificially induced fever is a valuable therapeutic procedure for the treatment of gonorrheal urethritis and its complications in male patients is undebatable. That the *in vitro* thermal death time of a particular strain of the gonococcus isolated from a given patient bears an exact parallelism with the thermolethal influence of a submission of the living human host to a fever of the same height and duration is debatable. 1 It has been the experience of Drs. Warren, Scott and Carpenter and of others that the gonococci have disappeared after an inadequate treatment, as judged by the thermal death time *in vitro*, or after the fever therapy when subjected to chemical applications. 2 When the gonococci survive an initial heating, they disappear following subsequent treatments of no greater duration and temperature. This common clinical experience is in sharp contrast to the statement that "a comparison of the thermal death time of strains of the gonococcus before and after inadequate fever therapy has shown that the strains recovered after exposure to such a fever may become more heat resistant." 3 The percentage of favorable results reported by those giving shorter fever treatments is about as good as that reported in this series. 4 The changes in the blood, such as the marked leukocytosis with a shift in the Schilling scale to the left, the increased phagocytic activity and the changes in the immunology may well be additional defense factors. 5 When the rectal temperature has reached a level of about 106 F the temperature of the pendulous urethra in the male may vary from 0.3 degree F higher to 2 degrees F lower than the rectal temperature as I have found by clinical thermometers inserted into the urethra to a distance of about 1 inch from the meatus. 6 The authors do report failures when the human host was subjected to a temperature sufficiently high and sufficiently long on the basis

of previous *in vitro* studies. That 19 per cent of such failures was "due possibly to the fact that each of these patients was infected with two or more strains of the gonococcus" may be incorrect if the previously made assertion that "a comparison of the thermal death time of strains of the gonococcus before and after fever therapy has shown that the strains recovered after exposure to such a fever may become more heat resistant" is correct. 7 Resistance to heat may conceivably parallel resistance to the other factors exerting a lethal influence on the organism. A microorganism when in the spore state, for example, may resist a greater amount of heat as well as a stronger chemical agent.

DR. HENRY B. GWINN, Washington, D. C. The value of any therapeutic procedure is largely dependent on its practicability. There are few institutions in which it is possible to determine the thermal death time of the strain of gonococcus with which each individual patient is infected. Other groups have modified this technique. At the Mayo Clinic one treatment of ten hours of fever between 106.6 and 107 F is given as a routine and about 90 per cent of the cases are reported bacteriologically and clinically cured. Those not cured in one treatment are given additional treatments. Even this technique means that the patient spends about thirteen hours in the fever therapy department. This necessitates two shifts of personnel. My associates and I have adopted a method that has given satisfactory results, has insured as far as possible the comfort of the patient, and also fits into the routine of the average hospital. We give a trial treatment of two hours of fever of 105 F, which conditions the patient's skin and cardiovascular system and also serves to allay any fear he may have. Then each patient, barring complications, is given six hour treatments of from 106.6 to 107 F at twenty-four hour intervals. Most of our patients are both clinically and bacteriologically free from gonococci at the conclusion of the first or second regular treatment. Those cases which are stubborn can often be speeded up by the instillation of 10 per cent solution of mild protein silver at the height of the treatment. This method of treatment not only utilizes the bactericidal action of the fever but also permits the natural immune bodies of the individual to assist in the procedure. We have had patients with chronic gonorrheal infection who for one reason or another discontinued treatment while still showing both clinical and bacteriologic signs of infection nevertheless completely clear up in a few days without additional treatment of any kind. This would seem to indicate that either natural immune bodies are mobilized by the fever or else the organisms, weakened by the fever, are an easier prey for antibodies. Dr. Antoine Schneider and I are at present studying the effect of hyperpyrexia on individuals who have been on a restricted protein diet. We believe that certain individuals who have been on this regimen may develop a peripheral neuritis resembling that of avitaminosis because their inadequate protein reserve has been drawn on by the increased metabolism caused by hyperpyrexia. It would seem advisable to increase the protein intake of such patients and also to supplement this with a preparation containing vitamin B₁.

DR. RALPH H. JENKINS, New Haven, Conn. Dr. Deming, Dr. van Wagenen and I have been working for the past four years on the effects of estrogen on the urogenital tract of a male monkey and on gonococcal urethritis in man. The injection of 9000 international units of theelin (the estrogenic hormone) into a male monkey, weighing 2,450 Gm., resulted in an epithelial hyperplasia and metaplasia in specific parts of the urogenital tract. The one or two cell deep cuboidal epithelium of the verumontanum and the epithelium of the urethra became stratified in type and from branched and penile urethra became stratified in type and from fifteen to twenty-five cells in depth. Cornification of the superficial layers gave it the appearance of vaginal epithelium. We attempted to treat a series of cases of acute anterior gonococcal urethritis in man with this substance. We found the disease to be the large part of the problem. In a series of more than thirty cases of acute anterior gonococcal urethritis in man treated with theelin doses ranging from 2,000 to 200,000 international units gave no conclusive evidence of definite cure. Not one of these patients developed any evidence of postoperative involvement during the course of treatment. This may be significant. No local irritation resulted from the administration

of the theelin, nor were there any unfavorable general symptoms noted. During the past year we treated two boys with this infection. The response was so encouraging that I shall report these cases. One boy, aged 5, received 2,000 international units of theelin intramuscularly every other day until 30,000 units had been administered. Symptoms progressively improved after two weeks. There was no evidence of the disease after seven weeks. Another boy, aged 6, received 10,000 international units of theelin intramuscularly daily until 90,000 units had been administered. Symptoms progressively improved after nine days. There was no evidence of the disease after three weeks.

DR EMILY DUNNING BARRINGER, New York. In the compilation of the nine laboratories that are making this comparative study of the complement fixation, Dr Archibald McNeil is not included, the man in America who has done more for the complement fixation than any other one man. The research group at the Kingston Avenue Hospital, which has been faithfully working on this problem for seventeen years, is not in that group either. I should like to ask Dr Carpenter what his proof of cure of the female cases he treats with fever therapy is. In my experience the finding of the gonococcus in women varies with the stage of the infection. In the acute and sub-acute stages it is found relatively easily by spread and culture. In the chronic stage, however, the finding of the gonococcus by these methods drops so that only from 10 to 15 per cent of cases can be so diagnosed. It is in this chronic stage of gonorrhea of the adult female that we are pressed hardest for diagnosis, and it is in this group that the complement fixation test is of the greatest value. I agree with Price of London that this test is essential as a test of cure. Price warns about a misinterpretation of a negative result in the male and urges that this always be checked by culture and spread. There are cases in the male, for instance, of infection of the seminal vesicles or prostate when by massage a closed infection has been changed into an open one. With this drainage established, the antibodies do not form. On the contrary, in women it is in this chronic stage with closed drainage or latent foci that cannot be reached as in the male, that a large number of positive reactions are obtained. The reliability of the complement fixation test is a moot point in America mainly because of its alleged false positives. There are a number of reasons for this. Some of them are as follows: 1. Confusion in the readings. Some workers rate their readings of the test higher than others, and their three plus or four plus may only rate a plus-minus reading with Price, McNeil, Thomson and Hamman. 2. Faulty antigen or faulty technic, as the reading of the test too quickly. 3. Insufficient appraisal of clinical symptoms. 4. The possible cross fixation with antibodies of other gram negative cocci, as *Micrococcus catarrhalis* or the meningococcus, *Micrococcus flavus* particularly type 2. The possibility of this occurrence is relatively rare. Price quotes that in a series of 7,000 cases there were only two possible cases in which *Micrococcus catarrhalis* could not be excluded. I should like to ask Dr Carpenter whether he knows of any other more reliable test to take its place and whether he thinks one has a right to consider a case of gonorrhea in a woman cured when the only laboratory tests used are those in which in advance one could expect to get positive results in only 10 to 15 per cent of cases.

DR WILLIAM P. HERBST, Washington, D. C. I know of two instances in which serious neurologic disturbances followed the hyperthermic treatment, one resulting in a condition which was diagnosed as a poliomyelitis. I have a suspicion that it was not poliomyelitis. The patient's lower extremities, the bowel and the rectum were paralyzed. In another case weakness occurred first in the lower extremities about three days after the completion of a series of five or six hyperthermic treatments. The treatments were given at Gallinger Municipal Hospital, where there is a Kettering cabinet under the direction of Dr Gwynn. The symptoms progressed steadily over a period of five days until the upper extremities were involved necessitating rather attentive nursing care. The patient has gradually improved, and the improvement, I think, was in part due to the administration of vitamin B₁ along with physical therapy. As laboratory procedures such as serum fixation tests are undependable in the majority of laboratories, it seems

to me that it will have to be thrown out of consideration as a diagnostic procedure in gonorrhea. That leaves the cultural method and the stain method. The cultural method also depends on the laboratory which is performing it, and I do not believe that the majority of laboratory culture reports can be relied on. The detail of the making of the culture is important. The penis in the male is not prepared in any way when the culture is made. The patient himself has to hold the glans to keep the prostatic secretion which is expressed and washes down through the urethra from coming out until the test tube containing the medium is put at the meatus and the material allowed to run down in the tube. The medium must be at body temperature. It is then put in the incubator and corked with a solid cork, not a cotton cork. That is another important detail brought out with the carbon dioxide method described by Dr Scott.

DR CHARLES M. CARPENTER, Rochester, N. Y. In response to Dr Barringer's questions, may I say that in our experience we have found the cultural method to be far superior to the complement fixation test for diagnosing gonococcal infection and for determining when the patient is cured, second, Dr Archibald McNeil was invited to join our cooperative study but found it impossible to carry on this work. In the third place, the serologist whom Dr Barringer has employed for carrying on her complement fixation studies is testing the blood samples submitted to seven other laboratories.

DR S. L. WARREN, Rochester, N. Y. Because one patient with a gonococcal infection may be cured by one hour of fever at a low level, whereas another patient may fail to be cured by twenty-seven hours of fever at 41.5 C, it is evident that these extreme variations make any analysis of the situation very difficult. For this reason we have tried to be conservative in our analysis of the data obtained from patients. There is no doubt that the variation in the patient's own resistance to the disease plays a considerable part in his recovery or failure to recover from the disease. The application of the thermal death time principle has suggested the proper biologic explanation of these variations in the amount of fever required to cure the patient. A fever with a duration of only 20 per cent of the thermal death time will often cure a patient who is in good physical condition, especially patients with acute infections. On the other hand, a fever as long as 80 per cent of the thermal death time has failed to cure some patients although the clinical symptoms have subsided to a great extent. There seems to be no correlation between the chronicity of the infection and the length of the thermal death time to justify the postulate that the organism which is most resistant to chemical agents would necessarily be resistant to fever. With regard to Dr Bierman's criticism, in our treatment the thermocouple measurements during fever (with the patient in the radiant energy cabinet and with loin cloths in place) show that the urethra is within 0.2 degree C of the rectal temperature. The use of the cultural method as improved by Dr Carpenter has now enabled us to fulfil criteria for cure in a far more accurate manner. On the other hand, as Dr Barringer points out these criteria may fail in the female when the tubal structures have been sealed off. In our experience, when there are no gonococci present in the cervix, urethra and vestibular and urethral glands after fever treatment we have been unable to find any clinical or laboratory data to suggest that the patient still harbors gonococci in the genital tract. The best test of cure is the biologic one of the re-assumption of marital relations or the marriage of the patient with resultant childbearing without complications. That has happened in seven of our series of 100 cases, both male and female and in five of the males alone. I would like to emphasize Dr Scott's statement that fever therapy is essentially a complicated hospital procedure requiring trained personnel (both physicians and nurses). We believe that it should be carried out only in those cases which have failed to respond to other methods. In our hands the technical cost of the procedure as outlined is about \$40 per treatment. Although repeated short fever treatments are often successful, we feel that it is more economical and less strain on the patient to attempt to cure him by means of one treatment the length of which is determined by the test of the organism, i. e., the thermal death time.

POSTOPERATIVE CARE IN SURGERY OF THE BILE TRACT

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The conclusions reached in this paper are based on personal experience and a study of 750 consecutive operations on the bile tract. In the past twenty-five years there have been notable advances in the diagnostic approach to, and the technical handling of, operations on the bile tract. On the other hand, postoperative care has been most tardy in its development. In fact, methods of handling patients after operations on the gallbladder and common duct have shown practically no changes. Little progress has been made, and most of the methods used even at this time are highly empirical and differ according to each surgeon's experience.

When a gallbladder has been removed or the common duct opened the immediate consideration is the care of the patient during the first forty-eight hours. Sedation with opiates hypodermically or with chloral and bromides by rectum is necessary, but these methods of employing drugs must be left to the experience and the dictates of good judgment, which should always be governed by the requisites of the individual patient. Vomiting in this forty-eight hour period should be especially guarded against, lest retching displace an important ligature or the fixation and suturing around the drain.

I am quite certain that in many cases postoperative hemorrhage from the cystic artery and bile leakage from the cystic or common duct develop as a result of early postoperative vomiting, and it is my custom to employ continuous decompression of the stomach with a Jutte tube introduced through the nose when the first tendency to retching or vomiting occurs. While the hypodermic administration of opiates and the administration by rectum of chloral and bromides combined are very helpful in allaying gastric and duodenal reversion, yet continuous decompression of the stomach by the indwelling nasal tube, in my opinion, is more valuable than all other measures.

Of equal importance are the maintenance of fluid balance and the support of the glycogenic function of the liver with dextrose. It is my custom to administer 1,000 cc of 10 per cent dextrose intravenously immediately after every operation on the bile tract, and this procedure is usually repeated eight hours later on the first postoperative day, twice on the second postoperative day and once on the third and the fourth postoperative day. In addition, if the patient is toxic and dehydrated an additional 1,000 cc of saline solution is given, making a total of 3,000 cc of fluid given intravenously in twenty-four hours, until the patient is able to take fluids freely by mouth. If the intravenous route is impossible to utilize for various reasons a fluid balance is then supplied by subcutaneous administration, and dextrose is added in the strength of 2.5 per cent. If necessary to supply a sufficient fluid balance, it is my custom to employ the large bowel by giving 500 cc of warm tap water slowly every four to six hours until the colon becomes irritable and has a tendency to reject the water. Contrary to the custom of many surgeons, I allow my patients to have ice and water by mouth from the beginning of the postoperative convalescence, provided they show no tendency to vomit.

Immediately after operations on the bile tract, and for several days thereafter, the possibility of postoperative pulmonary collapse must be borne in mind and, when present, dealt with according to the recognized measures acceptable for this complication.

In the first two or three days after my operation on the bile tract, I have learned to recognize the possibility and danger of acute toxic liver incompetence which may result fatally. This condition is characterized by an unexplained, very high fever and a state of depression accompanied by respiratory and circulatory weakness and is often associated with marked mental apathy and even coma. If the common bile duct has not been drained, one must fall back on determinations of the xanthoprotein, indican and cholesterol esters in the blood. Becher¹ has clearly demonstrated that in severe liver damage and particularly in hepatic coma the xanthoprotein of the blood is high and the indican low. The chemistry of the blood differs in uremia in which the xanthoprotein is high and the indican high. The normal level of xanthoprotein in the blood is from 15 to 25 mg per hundred cubic centimeters by colorimeter measurement, and the normal level of indican varies from 0.04 to 0.32 mg. I have recently observed a case of acute yellow atrophy of the liver in which the xanthoprotein was 148 mg and the indican 0.064 mg. Epstein² has convincingly summarized and recorded his personal experience showing that in liver damage there is a marked lowering of the normal ratio between the cholesterol esters and the total cholesterol in the blood. In parenchymatous degeneration of the liver he has shown that the cholesterol esters are markedly lower and, further, that a progressive rise in the cholesterol esters is definitely significant of a favorable prognosis. Preferably, determinations of the xanthoprotein, indican and cholesterol esters in the blood should be done before operations are undertaken on the bile tract, and daily checks of these constituents should be carried out postoperatively. Without these determinations one unfortunately has nothing but the clinical symptoms to depend on for recognition of this toxic liver failure, and so far the only therapeutic remedy is dextrose and saline solution administered intravenously. If dextrose and saline solution are regularly administered in the beginning, as outlined, it is possible that the disaster of acute toxic liver failure will be prevented. According to Ravdin³ there is an excess of fat in the liver in parenchymatous disease. When there is an excess of fat in the liver it is a question whether dextrose is the remedy for liver failure associated with a low glycogen content and a high fat content of the liver. There must be some way first to learn that there is an excess of fat and second to mobilize it. This is not known at present. Protein is probably the remedy, but determinations of blood proteins should be done first by the method of Moore and Van Slyke. If the values are low transfusion and the administration of less dextrose have given favorable results in a few of my cases. If the common bile duct has been drained one is at once supplied with hepatic bile from which certain evidence may be obtained that in many instances will foretell impending liver incompetence and thereby one has a guide in treatment and prognosis. This phase of the problem will be dealt with later in this paper.

Read before the Section on Surgery General and Abdominal at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1937.

1 Becher, Erwin and Herrmann, E. *Deutsches Arch. f. Klin. Med.* 82 (July) 1926.
2 Becher, Erwin. *Munchen med. Wchnschr.* 77: 432 (Feb. 5) 1930.
3 Epstein, E. Z. *Cholesterol of the Blood Plasma in Hepatic Biliary Diseases*. *Arch. Int. Med.* 50: 203 (Aug.) 1932.
4 Ravdin, I. S. Personal communication to the author.

POSTOPERATIVE HEMORRHAGE

Bleeding from the cystic artery, from large radicles in the gallbladder fossa or from injury to the hepatic artery or vein can be dealt with only by the usual surgical principles. However, jaundiced patients and those with severe liver damage resulting from acute infection and toxemia often show a tendency to continuous and prolonged postoperative bleeding which frequently ends fatally. According to my experience any forecast concerning this serious complication cannot be based on a preoperative determination of the coagulation and bleeding time of the blood. One of the most suggestive guides that one may follow is a very slow sedimentation rate of the blood, as suggested by Naegeli.⁵ For proper clotting of blood it is essential for fibrinogen to be present in sufficient quantity to unite with thrombin. It is generally believed that in liver damage there is a decrease in the fibrinogen content of the blood and that consequently there is a marked slowing in the sedimentation rate unless acute infection is present. Proper consideration must be given the factor of anemia in determining the sedimentation rate.

It has been claimed repeatedly that an excess of bile salts in the blood prevents coagulation by interfering with the formation of fibrin through the combination of thrombin and fibrinogen. Von Falkenhausen and Sauer⁶ stated that coagulability of the blood is not influenced by the presence of bile or bile salts in the blood stream. They claimed that severe liver damage associated with jaundice results in slowing the coagulation from an increase in antithrombin. Blood transfusion is the only specific treatment that I know for postoperative hemorrhage associated with icterus and liver damage. If slowing of the coagulability of the blood in this type of hemorrhage is due to an increase in antithrombin or anticomplement, as stated by von Falkenhausen and Sauer, then one may logically conclude that thrombin is the essential agent supplied by transfusion. In addition to thrombin, however, fibrinogen is supplied by blood transfusion, and thus the remedy has a dual capacity of counteracting the increase in antithrombin and the decrease in fibrinogen which are believed to exist in the blood after severe liver damage associated with icterus. Suffice it to say that blood transfusion should be repeated daily or twice daily until a favorable response is established. Many surgeons believe in treating this condition by repeated small transfusions, and in some cases I have known as many as fourteen large transfusions to be given over a period of seven days with favorable results.

DRAINAGE

After cholecystostomy or cholecystectomy many surgeons, of whom I am one, still believe in putting some type of drain down to Morrison's pouch or into the foramen of Winslow. The question is commonly asked: When should this drain be removed? The majority of my surgeon acquaintances believe in leaving it until the seventh day, their argument being that a fistulous tract is not established in a shorter period. I usually remove the soft drain by the fourth day, and if there is a tendency to nausea and vomiting I often lift it about 1 inch (2.5 cm.) at the end of the first twenty-four hours. In my opinion the only danger that can arise from removing it on the fourth day depends on the common tendency of most surgeons to close the layers of the abdominal wall too tightly around it at

the time of operation. This drain merely provides a lead or outlet, and if the opening through the abdominal wall is not too snug, serum blood or even bile will find its way to the surface without difficulty. Furthermore a drain left in for a week or ten days often provides for a slowly healing fistulous tract, which does not occur if the drain is removed around the fourth day. When to remove a drain from the gallbladder must depend largely on the pathologic changes observed in the viscus at the time of operation, the condition of the patient and the judgment of the surgeon based on a rather large clinical experience. I regret to say that I cannot lay down any rule for removing a cholecystostomy drain, for I have not done a cholecystostomy during the past twenty years.

DRAINAGE OF THE COMMON DUCT

Drainage of the common duct is indicated for the following conditions: (1) inflammatory, infectious process of ducts, acute or chronic, (2) obstruction from stone or stricture, making necessary decompression of the liver, (3) conditions demanding physiologic rest to the ampulla and the sphincter of Oddi, (4) pancreatitis, (5) malignant obstruction. It is with these conditions that the question arises: When should the drainage tube be removed from the common duct?

TABLE 1—Criteria for Removing Common Duct Drain

- (a) Chemical study of bile
- (b) Microscopic study of bile
- (c) Patulence of sphincter of Oddi

TABLE 2—Diagnosis of Cholangitis

Hepatic bile	Bile salts level decreased
	Calcium level decreased
	Cholesterol level increased
	Chlorides level increased
Liver damage severe	Cholesterol esters decreased
	Xanthoprotein increased
	Indican decreased

It is in this problem particularly that so little intelligent progress has been made and it is surprising to note how dogmatism and empiricism prevail in the customs of so many surgeons of wide experience in surgery of the bile tract. For instance, one active surgeon in New York expressed the opinion that when the catgut suture which anchors the tube to the common duct is absorbed the tube is ready to be removed. Another New York surgeon expressed the opinion that when the bile has been macroscopically clear for from three to five days the tube should be removed. A very active western surgeon stated that he leaves the tube in one month if no infection is present and from two to six months if infection is present. An active Boston surgeon stated that he leaves the tube in twelve days in the absence of infection and thirty days in the presence of infection. Another Boston surgeon who has done a tremendous number of operations on the bile tract said that he takes the tube out of the common duct in nine days provided there is no infection and on the twenty-first day if infection is present. A most prominent and well known southern surgeon stated that he removes the tube in all his cases on the tenth day whether infection is or is not present. This surgeon believes that tubes in the common duct conduce to stricture.

I have never observed stricture of the common duct from this cause and have left tubes in the common duct from six to fifteen months. My experience leads

⁵ Naegeli, Otto. *Blutkrankheiten und Blutdiagnostik*. Berlin: Julius Springer, 1931.
⁶ Von Falkenhausen, M. and Sauer, W. *Ztschr. f. d. ges. exper. Med.* 5: 398 (Sept. 15) 1927.

me to believe that there are three points to consider in maintaining or terminating drainage of the common duct (1) the liver factor—function normal or depressed, (2) the duct factor—inflammatory cholangitis, (3) the sphincter factor—sphincter spastic, inflammatory or obstructed. When inflammation, stricture, stone or new growth produces obstruction of the ducts, the intraductal pressure usually rises, and when it exceeds the hepatic secretory pressure, liver dysfunction, incompetence and often degenerative changes result. It is therefore evident that a common duct drain must be utilized for the purpose of decompressing

the presence or absence of bile salts, the level of bile chlorides, the cholesterol level and the presence of pancreatic ferments. Under no circumstances should the tube draining the common duct be removed until the bile salts have returned and the bile chlorides and cholesterol have come down to normal levels.

It is a common experience in cases of prolonged obstruction of the common duct for the first ounce of bile to show a total absence of bile salts and for the bile chlorides to measure from 700 to 800 mg per hundred cubic centimeters, thus indicating severe liver incompetence. In some of these cases with severe liver damage there often follows a rise in the level of bile chlorides, which I have seen go as high as 1,800 mg per hundred cubic centimeters, indicating that there has been a too sudden decompression of the liver, with a further impairment of function comparable to that commonly observed with sudden decompression of the kidneys by drainage of the urinary bladder in cases of prostatic obstruction. This condition may be somewhat combated by Reid's⁹ method of hydrostatic control of the bile output through the T-tube, provided the sphincter of Oddi is open sufficiently to shunt a small quantity of the bile into the bowel, thus cautiously diminishing the free egress through the T-tube. In some cases in which high levels of bile chlorides and low levels or absence of bile salts were noted, there occurred with the return of liver function, a gradual lowering of the chlorides and a return of the bile salts. When the bile chlorides reach a normal level of 450 to 550 mg per hundred cubic centimeters and remain stationary, I think it is safe to remove the T-tube provided the microscopic evidence of cholangitis has cleared up and the sphincter is functioning normally. In many of my cases normal levels of bile chlorides and bile salts appeared within the first seven to ten days, whereas in a number high chloride levels were maintained for two and one-half or three months. In no instances do I remove a T-tube until normal levels have been reached.

the liver and draining the inflamed ducts until they return to normal. It should be further maintained until obstruction at the sphincter of Oddi is overcome in order that the hepatic bile may empty freely into the duodenum. The criteria for removing a common duct drain must depend largely on three features: (a) chemical study of bile, (b) microscopic study of bile, (c) patulence of the sphincter of Oddi.

Research by Ravdin, Riegel, Johnston and Morrison⁷ demonstrated certain facts relative to liver function that can be applied clinically as criteria for the time of removing the common duct drain. These conclusions are as follows: In severe toxic liver damage the bile salts are diminished or absent in hepatic bile obtained through the common duct drain, and the bile chlorides, the levels of which normally correspond with those of the blood plasma, are increased. In cholangitis the bile salt concentration of hepatic bile is decreased, the calcium level is decreased, the chloride level is increased and the cholesterol level is increased. In disease of the gallbladder and in obstruction of the common duct one finds early and marked changes in the hepatic bile. The most important change is reduction of the bile salts below normal or a total absence of bile salts. The next most important change is an increase in bile chlorides. A return to normal levels of bile salts and a decrease in bile chlorides to normal plasma levels indicate a return of normal hepatic activity. In obstruction due to infection (usually with stones), the return of bile salts and bile chlorides to normal levels occurs slowly and late. In malignant obstruction (unassociated with infection), the bile salts and bile chlorides return to normal levels in a reasonably early period, from seven to ten days. Graham⁸ has shown that dyes given to determine liver function are eliminated from the blood quickly in the presence of malignant conditions and are retained longer and slowly eliminated in cases of obstruction associated with infection.

(a) *Chemical Study of Bile*—The first ounce (30 cc) of bile collected after institution of a drain in the common duct should be chemically studied to determine

7 Ravdin I. S., Riegel Cecilia, Johnston C. G. and Morrison P. J. *Studies in Biliary Tract Disease*. J. A. M. A. 103: 1504 (Nov. 17) 1934.
8 Graham Evaris. *Diseases of Gall Bladder and Ducts*. Philadelphia: Lea & Febiger, 1928.

TABLE 4—Course in Case 2

Operation, 12/28/35 jaundice, common duct stones, biliary cirrhosis		
Date	Chlorides Mg per 100 Cc	Bile Salt
12/28/35	610	Positive
1/ 2/36	870	Positive
1/ 9/36	759	Positive
1/11/36	699	Positive
1/15/36	722	Positive
1/21/36	717	Positive
1/23/36	716	Positive
1/30/36	590	Positive
2/10/36	495	Positive
2/10/36 T tube removed		

The chemistry of bile with regard to the presence of pancreatic ferments (lipase and protease) is important, as pointed out by Carter.¹⁰ If these ferments are found in bile, they usually indicate both obstruction at the sphincter of Oddi and absence of an accessory pancreatic duct opening into the duodenum. As previously noted, the cholesterol of hepatic bile is increased particularly in cholangitis, and therefore, if one is draining the common duct for cholangitis, the normal cholesterol levels should be reached in the bile obtained through the tube before the tube is removed. Reiteration is again made concerning the importance of cholesterol esters of the blood as they relate to liver impairment.

(b) *Microscopic Study of Bile*—With regard to removal of the common duct tube, a microscopic study

9 Reid M. R. *Ann. Surg.* 78: 620 (Nov.) 1923.
10 Carter R. F. *Surg., Gynec. & Obst.* 63: 163 (Aug.) 1916.

of bile obtained through the tube relates principally to the problem of inflammation of the duct. Owing to desquamation of epithelium and other processes of degeneration, the level of cholesterol is increased in cholangitis. Microscopically, this is indicated by the presence of cholesterol crystals. Cholesterol crystals disappear, with exceptions, rapidly and in most cases are absent after seven days of drainage of the common duct. In the majority of cases one will note that cholesterol crystals disappear under favorable progress in from two to three days. There are, however, three elements of importance that must be considered micro-

TABLE 5—Further Course in Case 2

Operation	10/23/36	obstruction of common duct white bile deep jaundice		multiple fine stones	
		Nonprotein Nitrogen		Chlorides	
Date		Mg	per 100 Cc	Mg per 100 Cc	Bile Salts
10/23/36		112		700	Negative
10/26/36				725	Negative
10/30/36				598	Negative
11/ 4/36				467	Negative
11/ 6/36				538	Positive
11/10/36	died	renal death			

scopically, as follows (1) crystals of calcium bilirubinate, (2) mucus, (3) pus.

Calcium bilirubinate varies in the drained bile, appearing off and on in varying amounts during the entire time the T-tube is in the common duct. Mucus in varying amounts is continuously present while the tube remains in situ. Pus is the most important microscopic observation, and until all evidence of clumped pus cells disappears it is wise to continue drainage with the T-tube. When the calcium bilirubinate, mucus and pus are excessive, it is often extremely beneficial to irrigate gently through the T-tube each day with physiologic solution of sodium chloride. I have had no experience with Pribram's method of irrigating the common duct with ether, but in cases in which cholesterol crystals are excessive this measure might be worthy of consideration. Too little attention has been paid to the microscopic study of the bile in relation to return to normal of the ducts, and with other factors favorable I do not think a T-tube should be removed from the common duct until removal is microscopically justified. The macroscopic appearance of drainage from the common duct is notoriously unreliable from both a microscopic and a chemical standpoint.

(c) *Patulence of the Sphincter of Oddi*—There are seven guides from which one may draw conclusions relative to the passage of bile through the sphincter of Oddi into the duodenum: (1) injection of saline solution through the tube, (2) clamping of the tube, (3) test for bile in the stools, (4) food test, (5) Reid's hydrostatic method, (6) estimations of the serum bilirubin after the tube has been clamped for twenty-four hours, (7) x-ray visualization. If the sphincter is open and functioning normally, the administration of food will act reflexly on the sphincter permitting a flow of bile into the bowel. This is indicated by a diminished amount of bile outflow through the drainage tube.

With an unobstructed sphincter the gentle introduction by syringe of saline solution through the tube in quantities of 20 cc or more will cause no pain or discomfort, and, likewise, clamping of the tube in the absence of obstruction will shunt the bile into the bowel without pain or distress. If clamping of the tube can be maintained for twenty-four hours without distress, there is still a possibility that the normal egress of bile

into the duodenum is lacking. This can be definitely determined by estimation of the serum bilirubin before and after the tube has been clamped for twenty-four hours. An elevation of the serum bilirubin indicates the existence of some obstruction of the outflow of bile and is a delicate criterion which may be considered reliable as an indication of partial obstruction. Under no circumstances should injection of saline solution or clamping of the drainage tube be carried to the point where it produces pain or distress. Discomfort and an elevation of the serum bilirubin are the most important guides to indicate that these procedures must be stopped, and Reid's method of hydrostatic pressure and dilatation of the sphincter should be substituted.

X-ray visualization¹¹ is the most valuable method for determining the patulence of the sphincter of Oddi. The method consists of the placing of an x-ray plate under the patient and the introduction of hippuran through the T-tube. If there is obstruction, from 8 to 10 cc of hippuran will cause discomfort. An x-ray picture made at this time will show a block at the sphincter and if there is a stone causing the obstruction it is readily outlined. If there is no obstruction, 20 or even 25 cc of hippuran may be slowly injected without discomfort, and the x-ray picture will show this emptying freely into the duodenum. This is a simple and harmless procedure and according to my experience very exact in its disclosures. The method is so satisfactory that it invites regular employment to the exclusion of other procedures if there is any question about the patulence of the sphincter.

It is important to remember that an open sphincter does not mean that a T-tube can be withdrawn. One must always remember that the chemical composition of the bile as it relates to the liver function, the microscopic appearance as it relates to the ducts, and the patulence of the sphincter of Oddi must all three appear to be normal before the tube is removed. One exception to this rule will be seen in cases of prolonged and well established cholangitis. In this condition chronic bilirubinemia is observed, and prolonged drainage of

TABLE 6—Course in Case 3

Operation	11/ 9/36	jaundice	common duct stones
		Chlorides Mg per 100 Cc	Bile Salts
Date			
11/30/36		7.0	Negative
12/ 3/36		1.000	Negative
12/ 5/36		1.000	Negative
12/10/36		6.0	Positive
12/24/36		660	Positive
1/ 8/36		570	Positive
1/ 8/36	T tube removed		

bile by a tube in the common duct beyond a reasonable period does not conduce to cure. If all these factors are satisfactory, healing of the sinus after removal of the drain from the common duct is very rapid and, one might say, almost immediate. With the factors of liver, duct and sphincter normal, there is rarely more than just a spot of bile leakage after the removal of the tube, and in the majority of cases the external fistula appears to have closed within the first twenty-four hours.

If the fistula continues to drain bile or the patient has attacks of colic following the attempt of the fistula to close spontaneously, one may be certain that obstruction is present and should then resort without further delay to x-ray visualization of the common duct by the introduction of hippuran through the fistula or through

a small catheter introduced as deeply as possible into the fistula. This will give definite information concerning obstruction either by stricture or by stone. If one is unable to demonstrate a stone associated with external biliary fistula by x-ray visualization, one then hopes that the obstruction may be temporary and always awaits an indefinite period for the fistula to close. If the fistula does not close, x-ray visualization should be repeated and further operative measures considered according to the circumstances. If further operative measures must be undertaken for a persisting fistula I myself favor the Dobrotworsky¹² procedure in preference to the poor results obtained by attempting to anastomose the fistula into the bowel tract.

Sometimes the failure of an external biliary fistula to close is due to a spasm of the sphincter of Oddi and this is frequently characterized by repeated attacks of colic. This type of colic frequently occurs after cholecystectomy and after any type of operation on the bile tract. It is sometimes termed 'convalescent colic' and may be due to exaggerated tone, to hypertrophy and, at times to residual infection in the sphincter and the ampulla. Ivy called the condition hyperkinetic sphincter. Iwanago¹³ on the other hand, showed rather convincingly that after cholecystectomy there is incontinence of the sphincter of Oddi for from two to seven weeks, after which tone returns and dilatation of the common duct follows.

Furthermore, Puestow¹⁴ has shown that there is no bile secretion in a normal fasting animal with a normal gallbladder but that with the giving of food there is a free flow of bile. He showed further that after cholecystectomy in animals there is a free flow of bile in both the fasting and nonfasting states. Clinically, however, after removal of the gallbladder or removal of the tube from the common duct, there occur in some patients repeated attacks of colic which are probably not due to stone. For these attacks amyl nitrite by inhalation and glyceryl trinitrate in one-hundredth grain (0.00065 Gm) doses under the tongue are the best therapeutic measures. McGowan, Butsch and Walters¹⁵ have demonstrated conclusively that morphine increases the intraductal pressure and does not give the relief afforded by the nitrites. Even in the presence of intermittent colic produced by stone, with block at the ampulla, I have seen glyceryl trinitrate give so much relief to one patient at the time of the colic that he was able to defer operative removal of the stone for eight months. I have repeatedly employed nitrites for the temporary relief of biliary colic since Dr Walters first called my attention to this remedy about eighteen months ago.

MALIGNANT OBSTRUCTION

In cases of malignant obstruction associated with jaundice, due to new growth in or around the ampulla, it is frequently deemed expedient by the surgeon to do nothing more than institute drainage of the common duct with a tube. As previously stated, the danger of liver failure is less in cases of malignant obstruction than in cases in which obstruction is associated with infection.

However, in cases of malignant obstruction too sudden decompression of the liver is possible in the first few days after drainage of the common duct is

instituted and can be determined by rising chlorides levels and decreasing bile salts in the hepatic bile. The only suggested treatment, if the chlorides should rise to a rather high level, is to attempt an increase of intraductal pressure by the hydrostatic method of Reid or by the partial occlusion of the drainage tube. If the latter course is followed, there will always be danger of bile leakage around the tube. When a tube is placed in the common duct for the relief of malignant obstruction, it is advisable to instill frequently a little warm saline solution in the tube in order that the lumen may be kept open, because drainage by tube for this condition must be maintained indefinitely unless surgical restitution of the bile flow into the intestinal tract can be accomplished. In one of my cases of inoperable carcinoma of the ampulla, I left a tube in the common duct for fifteen months. When disintegration of the tube seemed imminent, I removed it and performed a choledochoduodenostomy after division of the common duct transversely above the obstruction.

ASTHENIA

When drainage of the common duct is accomplished by a considerable amount of diversion of bile there usually develops a type of asthenia which is due to functional disturbance of the patient's digestion and absorption. This condition is characterized by loss of appetite, weakness and general loss of well being, such as one would expect from a disturbance of intestinal digestion.

With the diversion of bile there is a loss of the electrolytic bases, consisting of calcium, sodium and chlorides, and, most important of all, a loss of bile salts which are so important from the functional standpoint of activating the lipases and the emulsification of the fats. Many years ago the surgeon learned to overcome this difficulty, and invariably met with a favorable response on the part of the patient, by returning to the intestinal canal the important agents in the bile so necessary in carrying out the extrahepatic function of the bile. Experience has taught that at least 4 ounces (120 cc) of the patient's bile must be returned to the intestinal canal each twenty-four hours. The usual custom is to collect the diverted bile chill it in the ice box and have the patient take two ounces (60 cc) at a time by mouth after mixing it with a little grape-juice. The patient is told that it is a specially prepared bile which is given for the purpose of restoring his loss through the drainage tube. Occasionally a patient rejects this method of administering the bile and if this occurs a Jutte tube is utilized, and by this method larger quantities of the bile can be returned to the intestinal canal. This procedure of restoring the extrahepatic function of the bile should be resorted to in every case of drainage of the common duct as long as there is diversion of bile. I have met with no success by administering the various proprietary preparations of bile salts. When the sphincter of Oddi is patulous and the microscopic and the chemical studies of the hepatic bile do not necessitate free and prolonged drainage through the common duct tube, it is good practice to shunt the bile into the intestine by Reid's method of hydrostatic control, thus eliminating the necessity of returning the bile to the patient by the oral route.

Finally, I should like to emphasize the fact that proper preoperative study and preparation will often forestall postoperative complications.

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¹² Dobrotworsky, V. (Leningrad) quoted by Eliot Ellsworth Jr. *Tr. Am. S. A.* 54: 206 1906.
¹³ Iwanago, Hideo. *Mitt. a. d. med. Fak. d. K. Kaiserl. Univ. Fukuoka* 10: 1925.
¹⁴ Puestow, C. B. The Discharge of Bile Into the Duodenum. *Arch. Surg.* 23: 1013 (Dec.) 1931.
¹⁵ McGowan, J. M., Butsch, W. L. and Walter, Walter. *Ann. Surg.* 104: 1013 (Dec.) 1936.

ABSTRACT OF DISCUSSION

DR EDWIN P. LEHMAN, University, Va. I agree with most of what Dr Payne has said. I use duodenal suction even more freely than he advocates, often beginning it immediately after operation, and I have been impressed with the smooth postoperative course that usually follows. I also drain the gallbladder bed in the uncomplicated case following cholecystectomy, but I remove the drain at forty-eight hours, believing it of value only as a protection against immediate postoperative slipping of ligatures. I cannot too earnestly support the value of bile feeding for patients suffering from total loss of bile. Among the newer conceptions, the relationship of the nitrites and of morphine to common duct physiology is of outstanding importance. Dr Payne has in some instances presented biochemical observations rather more definitely than they warrant. Without belittling the fundamental importance of the work of Ravdin the necessity to delay removal of the common duct tube until the bile approaches a normal chemical constitution is not clear. Is there any evidence that given a normally functioning sphincter of Oddi with free discharge of microscopically normal or nearly normal bile into the duodenum, the liver recovers its function any less rapidly than if the bile is escaping through the long limb of the T tube? Demonstration of a functioning sphincter is by far the most important criterion for the removal of the tube. C. S. Stone, working in the laboratories of the University of Virginia on liver glycogen and its relationship to diet in partially hepatectomized rats, observed that in animals fed on a high carbohydrate diet the liver glycogen was high, provided the animals were killed when the stomach was filled. If they were starved before being killed, however, the liver glycogen values were lower than any other observed in the entire study. Stone interpreted this phenomenon as an expression of increased insulin secretion stimulated by the days or weeks of high carbohydrate intake. When food is abruptly stopped, the excess of available insulin results in the rapid elimination of the liver glycogen. The phenomenon is presumably of the same nature as that which results in the so called paradoxical hypoglycemic reaction following sugar tolerance tests in the patient with low carbohydrate storage. Study of the liver glycogen in gallbladder patients under spinal anesthesia resulted in analogous observations. In a few instances the liver glycogen in patients, all on a high carbohydrate intake before operation, varied directly with the giving or withholding of a dextrose infusion on the morning of operation. The concentration of liver glycogen was as much as ten times greater when an immediately preoperative dextrose infusion was given than when it was withheld. These observations have a certain practical application.

DR HAROLD L. FOSS, Danville, Pa. The general principles in postoperative care, as laid down by Dr Payne are fundamental. There is not perfect unanimity regarding acute toxic liver incompetence. Not all authorities are agreed as to the entity of 'liver death'. Several significant contributions suggest that many patients who, prior to death present symptoms of this rather indefinite syndrome are found at autopsy to possess fatal lesions quite unrelated to the liver. Until our knowledge of hepatic function becomes more definite, can we be sure of our ground regarding postoperative liver insufficiency? Becher, Hermann, Epstein and, especially in our country, Graham and Ravdin have made invaluable contributions in furthering our knowledge of these subjects. While the practicability of the biochemical studies referred to by Dr Payne and carried out postoperatively as a specific index of the patient's progress may possibly be questioned from them, no doubt, tests of great value will be produced. By the same token one might question the clinical value of chemical and microscopic examination of the bile as an indication of the appropriate time for the removal of the drains following choledochostomy. I should like to offer the thought that drainage, not only in cholecystectomy but also following choledochostomy, may in many instances be dispensed with. In feeling my way in my own operating room over a period of twenty years I have gradually reduced the number of cases in which drainage is established following cholecystectomy. With further perfection of technique and the acquirement of greater skill and experience, I find that with meticulous care in the control of

hemorrhage in the ligation of the cystic duct and in the closure of the liver notch, drainage becomes less necessary. If there is but slight cholangitis and the obstruction has been removed, I am convinced that following the removal of common duct stones, operators can greatly increase the number in which, after removal of stones from the common duct, the latter may be closed by means of fine silk without drainage and much to the patient's advantage. The T tube is a foreign body which the biliary passage strives strenuously to extrude, and although it has been left in for years as is often the case in plastic operations on the common duct, I am led to believe that common duct drainage occasionally does more harm than good. During the past year, less than one third of my patients had drainage following cholecystectomy and choledochostomy, and there has been a decided improvement in the progress these patients have made.

DR FRANK K. BOLAND, Atlanta, Ga. Some authorities declare that abdominal distention is due to air swallowing and not to fermentation. It is difficult to believe that fermentation is not an important factor in the causation of the abdominal distention as the condition frequently follows the taking of certain drinks the first few days after operation. Two drinks to which I have special reference are orange juice and grape juice. Grape juice causes gas pains but especially produces nausea. The nauseating qualities of grape juice in postlaparotomy patients are so constant that long ago I absolutely forbade its use. Orange juice is a pleasant beverage with rich vitamin content. The administration of orange juice, however, to a patient within the first few days following an operation on the biliary tract invariably causes gaseous distention. I am absolutely opposed to the use of this fruit juice at this time. I allow patients to have cold water and crushed ice within the first twenty-four hours of laparotomy, even though they vomit it. If the vomiting becomes severe and prolonged, all fluids by mouth are stopped and saline solution and dextrose are given by parenteral methods. The administration of fluid by retention enema, not proctoclysis, is a convenient, inexpensive method and in some way enables patients to void, obviating largely postoperative catheterization. The Levine tube is invaluable. The next fluid after water which can be safely given is ginger ale and perhaps tea or clear broth. Emile Holman, in a recent issue of *Surgery* calls attention to the value of frequently changing the patient's position in bed as a means of getting rid of gas. Long ago I learned that it was unwise to give the average patient an enema too early after operation. Intestinal tone is apt to be so much lessened that the bowel is unable to expel the enema with the result that distention and pain may be increased instead of decreased. Now I use a colon tube frequently for several days before ordering any enemas. Gas and fluids are usually withdrawn in this manner, and much relief is afforded. An enema need not be given for three or four days or even a week. Passage of gas may be facilitated by the administration of solution of posterior pituitary, pitressin or prostigmin.

DR WILLARD BARTLETT JR, St. Louis. It has been a great pleasure to hear this thoughtful presentation of Dr Payne's methods which he is using in an effort to substitute objective evidence for a mere routine in the postoperative care of patients with biliary tract disease. May I call attention to a method which I have been using since approximately 1930 in order to obtain further knowledge about such patients and accomplishing a certain amount of therapy in one small group of patients with biliary tract disease. This is the performance of a cystoscopy of the gallbladder through a biliary fistula maintained by a Pezzar catheter on those patients in whom cholecystostomy has been performed, either as the only contemplated operation on the biliary tract or as the first stage of a two stage attack on the extrahepatic duct systems. The cystoscopy of the gallbladder through the fistula should not be done under six weeks in order that the fistula may have become amply solid from the formation of the scar tissue. One is astonished to find how frequently many stones can be removed six weeks after operation when it is thought at the time of operation that the gallbladder has been completely emptied of stones. It is a most useful procedure. I reserve it for this particular group of patients and can recommend it heartily.

DR PETER B. SALITCH, New Orleans I was glad to hear Dr Payne say that there was very little to be done about the disturbance of the liver function postoperatively. One must always be careful in doing a cholecystectomy not to insult the liver, and as careful as one may be, one may have either a known or a reflex disturbance of the liver at the time of operation. In all my postoperative gallbladder cases I use epinephrine. I use between 5 and 10 minims (0.3-0.6 cc). If I have a bad case, I use 10 minims every three hours, or one of lesser gravity, from 5 to 6 minims. I cannot think of anything prettier than to watch the effect of the epinephrine. If one has a bad liver in a case of gallbladder operation, one will find as long as the liver is not functioning properly that there will be no reaction from epinephrine. How do I know when the liver is beginning to function? As long as the liver is not functioning, as I said, there will be no reaction. But as soon as the liver function is returning, the patient will have a decided reaction. Then I know that the liver function is returning to normal. If I have a bad case, I will not cut the epinephrine out altogether but will cut down the dose to, say, 5 minims (0.3 cc) every four hours, or 6 minims every eight hours. And the next day, if even 5 minims causes this reaction, I cut out the epinephrine altogether.

DR ROBERT LEE PAYNE, Norfolk, Va. Lest the chemical studies that I have shown seem complicated, I tried to cut down the slides to show that the principal things to study are bile salts and bile chlorides, and that is very simple. The Whitehorn test, the same test used for the determination of chlorides in blood plasma, and Pettenkofer's test for bile salts are all that is necessary at the present time. I am thankful to all who spoke in the general discussion, and particularly to Drs Foss and Lehman for questioning the value of these chemical studies. I do not know yet, in my limited experience, how valuable they are. They merely represent a stepping stone up from the empirical methods I have been following for years, and I have simply given what I have gotten out of them.

SEROLOGIC ANTIBODIES AGAINST HORMONES

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One of the most interesting and striking discoveries in the field of endocrinology in the last few years has been the fact that extended treatment with certain hormone preparations is followed by a resistance of the treated organism to these substances. This phenomenon was first described for thyroxine by Abelin¹ in 1928 and has since been confirmed for a number of different principles, such as parathyroid extract, adrenal cortex extract and particularly the thyrotropic and gonadotropic principles of the anterior lobe of the pituitary. Collip² explained the phenomenon of hormone resistance by his theory of antihormones.

The antihormone theory as originally proposed was as follows. For each hormone there may be an opposite or antagonistic principle. This antagonist is present in the normal subject but may not be detected until it exceeds in amount the hormone substances with which it is balanced. The analogy was drawn between the hormone antihormone complex and a chemical "buffer" system, and in this way the antihormone theory was related to the principle of inverse response. The postulated dual hormone control of peripheral structures is analogous to the proved dual nerve control (sympathetic and parasympathetic). The so-called antihormone was considered as a true hormone in every way and not as the result of an antigen-antibody response.

At the end of his article Collip restricted his theory as follows:

In view of the fact that a somewhat extensive search for evidence of the existence of antihormones to estrin to parathyroid hormone and to insulin has failed as yet to demonstrate such, it is possible that the antihormone theory should be applied only to trophic principles.

Several investigators have succeeded in obtaining positive serologic reactions (complement fixation, precipitins) against the gonadotropic pituitary hormone with the serum of prepared animals (Ehrlich,³ Bachman,⁴ Eichbaum and Kindermann,⁵ Brandt and Goldhammer⁶ and Twombly⁷). But, except for the first author, it has been admitted by all that the serologic antibody reaction was not specific against the hormone itself but against some traces of ill defined impurities of the hormone preparations used. They emphasized in accordance with Collip's opinion that the serologic antibodies had nothing to do with the antihormones that protect the animal against a special hormone and can be transmitted with the serum of resistant animals to untreated and nonresistant ones.

The problem entered into a new phase when my collaborators Schaechter and Kunewaelder and I⁸ succeeded in producing serologic antibodies against a well defined and pure chemical substance, thyroxine.

Our experiments have been carried out on rabbits. In these animals injections of thyroxine bring about a loss in body weight and a diminution of the serum lipase which is so constant that it can be used as a test for the effect of thyroxine. If rabbits are injected for a period of several weeks intermittently with small doses of thyroxine, they no longer react in this typical way, neither the body weight nor the serum lipase is diminished, they have become resistant to thyroxine. In this stage a positive complement fixation reaction with the serum of the rabbits can be obtained if thyroxine is used as antigen. In unprepared rabbits this reaction has always been negative, serologic antibodies have been produced by the prolonged treatment with thyroxine. Although the appearance of these serologic antibodies coincides with the biologic resistance of the animal against thyroxine, it seems that this resistance is not produced by the antibodies. The thyroxine resistance cannot be transmitted with the serum of resistant animals to untreated ones.

Based on these experimental facts we carried out complement fixation tests with thyroxine as antigen in a greater number of cases of hyperthyroidism and found this reaction to be positive in a high percentage whereas other cases not showing any signs of hyperthyroidism gave this reaction only occasionally. Among 103 cases giving a positive complement fixation reaction with thyroxine as antigen, forty-six were cases of a severe or moderate hyperthyroidism. Seventeen cases presented higher degrees of essential arterial hypertension, which so frequently is associated with symptoms pointing toward a hyperactivity of the thyroid. Permanent tachycardia, an elevated basal metabolic rate, vasomotor irritability, and an increased number of reticulocytes are signs to be encountered also in cases of essential hypertension presenting a positive

3 Ehrlich H. *Wien klin Wchnschr* 47: 1323 (Nov 2) 1914.
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serologic thyroxine reaction In three cases presenting a positive reaction, thyroid preparations had been taken for a long time, because of obesity or some slight symptoms of thyroid insufficiency The other thirty-seven cases presenting a positive reaction included premortal conditions, febrile diseases and some conditions giving an extremely intensive complement fixation reaction with a syphilis or gonococcus antigen The great majority of patients who gave a positive reaction for syphilis or gonorrhea failed, however, to give a positive complement fixation reaction with thyroxine

The thyroxine reaction was negative in 330 cases, including twenty-four cases of slight or moderate hyperthyroidism Cured cases of hyperthyroidism gave negative reaction with thyroxine, in five of which the serum reaction had been positive before the operation, becoming negative after successful surgical treatment It was particularly striking that in one case as early as sixteen days, in a second ten days and in a third even eight days after the operation the serum reaction had become negative, whereas four days after the operation the reaction was still positive There was no difference whether the hyperthyroidism represented the typical syndrome of an exophthalmic goiter or whether it was a toxic goiter (toxic adenoma) Patients with myxedema always gave a negative reaction, pregnant women also gave a negative reaction From all these observations in animal experiments and human pathologic studies one can conclude that a positive complement fixation reaction with thyroxine is as a rule an indication of an abnormally high supply of the organism with thyroxine

The positive complement fixation reaction with thyroxine as antigen has been found not to be specific as far as the antigen is concerned Without exception diiodotyrosine as antigen gave the same result as thyroxine Also epinephrine and, in the majority of cases, also insulin can be used as antigens instead of thyroxine with the same results

In rare cases a positive reaction with insulin was obtained, whereas the reaction with thyroxine and the other antigens just enumerated was negative One of these cases presented a severe spontaneous hypoglycemia due to an insuloma of the pancreas proved later by operation This case has been reported by my collaborators Schur and Taubenhaus⁹ Two other cases of spontaneous hypoglycemia, free of any signs of hyperthyroidism, gave a positive reaction with insulin and also with diiodotyrosine It seems probable that in these cases the hyperinsulinism had provoked a production of serologic antibodies which in two of them were not limited to insulin in a specific manner but were extended to some related antigens Among quite a number of patients with diabetes treated with insulin only one gave a positive reaction to insulin and diiodotyrosine Signs of hyperthyroidism in this case were not present We had the opportunity of examining also the serum of five patients with schizophrenia who had been treated in the psychiatric clinic of Professor Poetzel with insulin shocks None of these serums gave a positive reaction

In a group of cases the complement fixation reaction was also tried with the synthetic substance sympatol which differs in its chemical formula from epinephrine only in the lack of one hydroxyl group in the cyclic ring This reaction paralleled without excep-

tion the reaction obtained with epinephrine and the other enumerated antigens Since it was evident that the serologic reaction with the different antigens thyroxine, diiodotyrosine, epinephrine, sympatol and insulin must be due to a chemical substance common to all, we tried to find this common constituent This constituent could not be any other substance than a para-oxyphenol ring or phenol itself Therefore we tried to find whether the reaction in the thyroxine positive cases could be obtained also with the constituents of diiodotyrosine The results were definite If the reaction with thyroxine and diiodotyrosine respectively was positive, it was positive too with tyrosine but negative with alanine And in these cases not only tyrosine but also phenol gave a positive reaction It was thus proved that the complement fixation reaction with these hormone preparations, which can be produced experimentally by the treatment of rabbits with thyroxine and which is to be obtained in the majority of cases of hyperthyroidism, was nonspecific and directed against the phenol group It was present in thyroxine as well as in the other hormone preparations and substances used in our experiments

In a series of experiments carried out on rabbits we found that a positive complement fixation reaction against the enumerated antigens could be artificially produced not only by prolonged treatment with thyroxine but also by such treatment with diiodotyrosine, epinephrine and inconstantly with insulin The appearance of serologic antibodies against insulin in these animals was not associated with a higher resistance of the animals against insulin, tested by their hypoglycemic reaction to an insulin injection Quite recently Taubenhaus succeeded in producing a positive complement fixation reaction with phenol as antigen in rabbits that had been injected for a longer period with small doses of phenol In some of these rabbits the complement fixation reaction with the syphilis antigen had become positive at the same time It is known that such a reaction is not infrequently observed also in untreated animals The aim of further investigations will be the elucidation of the nature of the serologic antibodies with which we are dealing

SUMMARY

1 A prolonged treatment of rabbits with injections of thyroxine leads to a resistance of these animals against thyroxine and to the appearance of serologic antibodies detectable by the complement fixation reaction

2 A prolonged treatment of rabbits with diiodotyrosine, epinephrine and frequently also insulin and phenol is followed by the appearance of serologic antibodies detectable by the complement fixation reaction

3 Most patients with hyperthyroidism give the same positive serum reaction, whereas in other individuals this reaction is negative as a rule

4 The complement fixation reaction is to be obtained in almost the same way with different antigens thyroxine, diiodotyrosine, epinephrine, sympatol, insulin, tyrosine and phenol Alanine has been found to give a negative reaction if used as antigen

5 Three patients with spontaneous hypoglycemia gave a positive reaction, one of them with only insulin as antigen

CONCLUSION

1 The extensive nonspecific complement fixation reaction involves different hormones and other substances containing a phenol group

⁹ Schur M and Taubenhaus M Ztschr f klin Med 128 292 1935

2 It is apparent that different degrees of endocrine hyperactivities such as hyperthyroidism and hyperinsulinism as well as experimentally produced states of hyperhormonization in animals may give rise to the appearance of nonspecific serologic antibodies

Mariannengasse 10

CRITICAL EVALUATION OF VACCINE THERAPY IN RHEUMATISM

EDWIN P. JORDAN, M.D.

CHICAGO

The criteria for the use of vaccines in the treatment of rheumatism are not yet clearly defined. It is hence necessary to examine the theoretical considerations supporting the use of vaccines. Their use demands the assumption that rheumatism—at least those types treated by vaccination—is due primarily to bacterial infection. Of necessity, therefore, an etiology or virus of non-infectious nature cannot now be considered in relation to vaccines. Adherents of such etiologic theories must thus be opposed to vaccine therapy as a rational procedure.

There are several possible modes of action of the bacterial proteins which presumably are the primary and active constituents of all vaccines. The first is by stimulation of immune body formation. If the immunization intended by the administration of vaccines is specific in nature, it can be effective only if the bacteria which are already present in the body and are causing the disease are not in themselves sufficiently antigenic to produce clinical immunization by the development of antibodies. The affirmation of this argument deserves careful thought and is at first glance not convincing. There seem to be no other diseases in which, during the actively infectious stage, vaccines can be given with definitely good therapeutic effects. Furthermore, up to the present, when preparing vaccines for use in rheumatism one is dealing with organisms that are not universally recognized as playing a causative role.

It is possible that immunization might result in a nonspecific manner. Thus, if immunity could be produced by a group of protein antigens it might not be necessary to use the specific organism causing that particular infection. Specificity seems of probable importance, however, when viewed in the light of longer experience with the immunologic specificity of such etiologic agents as the typhoid-paratyphoid group of bacteria. Specificity seems at the very least to be a desirable element in the further examination of the rationale of therapy.

The second possible therapeutic action of vaccines in rheumatism is by desensitization. If desensitization is a logical procedure in the treatment of rheumatism, it is necessary first to establish the fact of true protein sensitization. At present the conception of true hypersensitiveness rests largely on arguments by analogy. The work of Klinge, Swift and others indicates, it is claimed, a parallelism between rheumatic fever, or other manifestations of rheumatism, and true protein allergy. Klinge, for example, has produced histologic changes in experimental animals similar to those observed in rheumatism in man, by means of sensitization to horse serum. This factual observation, however, does not

mean that rheumatic fever in man is produced by horse serum, and caution must be exercised in implying that specificity is absent. Arguments for protein sensitization have also been based on observations of skin reactivity, while this line of investigation may be promising, the facts as yet remain difficult to interpret. Much work, therefore, remains to be accomplished before it can be said with any sense of certainty that the clinical manifestations of human rheumatism are truly due to protein sensitization. Furthermore, even if and when this proof is forthcoming, it will be necessary to determine what particular protein or group of proteins shall be used in the desensitization of human individuals. This will involve particularly the choice of bacterial strain or strains, the method of preparation, the mode of administration and the preferred dosages. Claims are even now made for autogenous bacteria, for the use of filtrates, for intravenous administration and for other variations in technique. Arguments can be advanced for or against these factors, but positive and final choice of methods cannot be made now. Investigations must be controlled carefully by thorough knowledge of the pathology, immunology and natural history of the disease.

In view of the fact that true rheumatism in human beings has not been satisfactorily reproduced in experimental animals, present investigations must be based on clinical observations. In many instances clinical observations are untrustworthy, but careful attention to control indicates that reliable conclusions are not wholly impossible. The thorough knowledge of the clinical course—both when patients are untreated and when they are treated by other means—and of laboratory tests, and a thorough understanding of the pathology may add considerably to the evaluation of therapeutic procedures.

Pending further evidence supporting the use of vaccines, it is well to examine the present status of their use in practice. Judging from the clinical type and known pathology, there are certain groups of rheumatism that would seem more likely than others to respond to treatment by vaccines.

RHEUMATIC FEVER

The clinical course of typical rheumatic fever is one which is usually somewhat self limited with regard to the recognizable active phase and in general does not last long enough for the close analysis of the results of treatment with vaccines. It seems difficult at present to judge fairly the effectiveness of vaccine treatment in a disease such as rheumatic fever, which may last actively perhaps only a few weeks. There are, however, types of rheumatism which in many respects resemble rheumatic fever but lack its dramatic quality of onset and acute febrile course and which last for months or even years. Some observers call this clinical syndrome rheumatic infection and ally it closely with the classic rheumatic fever. In some patients of the latter group, the course is so chronic that long continued therapy may be evaluated more satisfactorily. Personal observation leads me to believe that one characteristic of some patients in this group is an abnormally slow sedimentation rate of the blood. Similar rates are commonly noted in hay fever and other allergic diseases. This contrasts markedly with the rate usually observed in acute rheumatic fever. There is thus some support both from the clinical history and from a laboratory test that some members of this group are truly hypersensitive. Many of these individuals will show a married

exacerbation of symptoms following any sore throat or apparently minor infection. This change in symptoms is similar to that occurring in allergic individuals following increase in their exposure to the proteins to which they are sensitive. It is this group therefore, which seems to me to offer the most likely one for practical desensitization with vaccines. It is possible that the proper specific protein can be determined by means of cutaneous tests with organisms or their products and that definite clinical improvement may follow successful desensitization.

RHEUMATOID ARTHRITIS

The type of rheumatism most commonly treated with vaccines is rheumatoid arthritis. Much has been said and written about clinical improvement resulting from vaccine therapy in this disease complex. It is possible that some modification of the natural history of the disease does occur, but review of the literature indicates in many instances a lack of control over the necessarily prolonged period which places doubt on the value of the clinical conclusions. Thus it is generally recognized that rheumatoid arthritis goes through a natural history which is reflected by considerable variation in the subjective sensations of the patient. No definite periodicity has been observed. Nevertheless patients treated for periods of months or years will, in the vast majority of instances, develop periods of remission which often appear to foreshadow permanent improvement. This frequently occurs no matter what the treatment. Furthermore, satisfactory control of vaccine therapy from the standpoint of laboratory tests and pathologic modification, to my knowledge, has not yet been reported. The burden of proof, therefore, as to the efficacy of vaccine treatment in this type of rheumatism depends definitely on those who employ it as an established therapeutic procedure.

OSTEO-ARTHRITIS

There seems to be little scientific support for the use of vaccines in the treatment of pure osteo-arthritis when such exists. The infectious element, if any, appears to be negligible. Unless vaccines used in this disorder act in some nonspecific manner to stimulate the circulation and perhaps thus improve the subjective sensations, there seems little scientific basis for their continued use.

SPECIFIC ARTHRITIDES

In the specific joint diseases due to the pneumococcus, the gonococcus or other known organisms, long continued vaccine therapy either for immunization or for desensitization has not been generally employed. Other methods of therapy in general have given more satisfactory results.

CONCLUSION

The further evaluation of vaccine therapy in rheumatism depends largely on clinical proof, based on the choice of which patients may be most likely to respond to treatment, on the preferred method or methods of administration and on valid criteria for controlling the results. Until these points are carefully considered, the use of vaccines in rheumatism broadly considered, rests on pure empiricism. It is justifiable to employ them in selected cases under close observation with the object of obtaining more precise information. Their routine use, however, with any implication of certain cure cannot be too strongly deprecated.

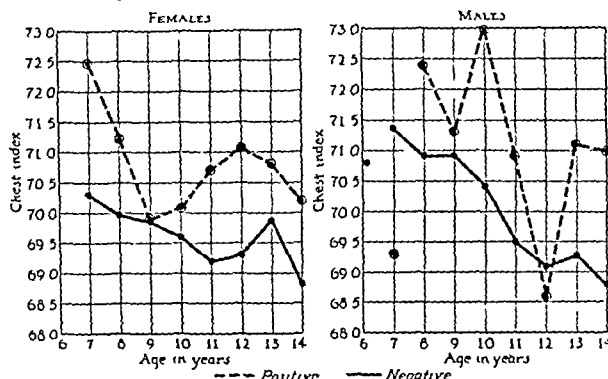
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CORRELATION OF THE POSITIVE REACTION TO TUBERCULIN AND THE SHAPE OF THE CHEST

S. A. WEISMAN, M.D.

MINNEAPOLIS

In a study previously made on the shape of the normal and of the tuberculous chest, it was found that the average normal chest was flat and wide and that the average tuberculous chest was deep and narrow.¹ It was also shown that the deep chest was an underdeveloped, primitive type of chest, resembling an infant's chest in shape. Later studies on the shape of the chest and on environment² showed that children from the poorer socio-economic environments had on the average a deeper chest, weighed less and were shorter than the children from the higher socio-economic levels.³ An investigation recently made on the incidence of tuberculosis in the various school districts in Minneapolis³ revealed that there is a very high incidence of tuberculosis among the children from the slums, where the deep chest prevails. Ten times as many cases of tuberculosis were reported from a school district which is perhaps the poorest in the city as were reported from the best school district.



Thoracic index and age of positive and negative reactors

Since the tuberculous chest is deep and narrow and since there is such a high incidence of tuberculosis among the children from the poorer districts, where the deep chest predominates, one should perhaps expect to find a higher incidence of the early manifestations of a tuberculous infection in apparently normal deep-chested children than in children with wide, flat chests. It is the purpose of this report to present such a study.

During the spring of 1936 the parochial school children of the city of Minneapolis were given the Mantoux cutaneous test by Drs J. A. Meyers and N. M. Levine and members of the Minneapolis health department. I measured the chest diameters of 2,723 of these children and determined their thoracic indexes. (The thoracic index is the ratio of the depth of the chest to the width at the nipple line.)

Some time later Dr. Harrington of the Minneapolis health department sent me a list of the children that

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2. Weisman, S. A. Contour of the Chest in Children According to Environment. *Am. J. Dis. Child.* 40: 52-59 (Jan.) 1935.

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gave a positive tuberculin reaction. The thoracic indexes of the positive and negative reactors were then compared. It is evident from a study of the accompanying graph and tables 1 and 2 that the children who reacted positively to the Mantoux cutaneous test had on the average a definitely deeper type of chest or a higher thoracic index than the children who did not show a reaction. After the ratio between the means of the positive and the negative reactors was determined, the mean ratio was calculated for statistical differences. The mean ratio was over 3 in each group, a fact of definite significance.

A positive reaction to tuberculin does not necessarily mean existing active tuberculosis. It does mean, however, that tubercle bacilli have gained entrance into the body, that there has been or is now an active form of tuberculous infection in the body.

Harrington, Meyers and Levine,⁴ in their recent report on "Significance of the Tuberculin Test," stated:

The tuberculin test is extremely valuable in determining who in a family or in a community has foci of tubercle bacilli in the body. A positive reaction is diagnostic of the first infection type (primary complex) somewhere in the body. This type rarely causes significant illness but is always the forerunner of reinfection, destructive forms of disease, both acute and chronic, when this type develops. The tuberculin test, therefore, serves as a screen to select those who have been infected through direct or indirect exposure and who should be carefully examined and kept under close observation thereafter for the development of clinical disease.

TABLE 1—Thoracic Index of Positive and Negative Reactors
Comparison of Means

Age, Yr	Boys								Ratio
	Negative			Positive			Diff	S E diff	
	No of Cases	M	± S E m	No of Cases	M	± S E m			
6	52	708.13	± 5.78						
7	135	713.61	± 3.24	7	693.29	± 11.27	20.38	± 11.73	1.74
8	148	709.43	± 3.69	11	724.91	± 12.92	15.45	± 13.44	1.15
9	157	709.00	± 3.37	26	713.12	± 8.00	4.07	± 9.03	0.45
10	169	704.22	± 3.43	25	729.50	± 8.99	25.58	± 9.62	2.66
11	171	695.30	± 3.10	29	709.38	± 8.56	14.08	± 9.10	1.55
12	157	691.00	± 3.41	26	686.35	± 6.58	4.47	± 7.41	0.60
13	153	692.78	± 3.41	19	711.16	± 10.47	18.38	± 11.01	1.67
14	75	688.32	± 5.01	19	710.53	± 10.70	22.21	± 11.81	1.88
15	10	711.50	± 24.92	5	713.80	± 29.79	2.30	± 38.84	0.06
Over 15	5	678.00	± 11.67						

Mean Ratio = 3.842

In the tables S.E.m indicates standard error of the mean

TABLE 2—Thoracic Index of Positive and Negative Reactors
Comparison of Means

Age yr	Girls								Ratio
	Negative				Positive				
	No of Cases	M	± S.E. m	No of Cases	M	± S.E. m	Diff	± S.E. diff	
7	127	703.39	± 3.46	19	724.90	± 7.66	21.56	± 8.41	2.56
8	154	699.68	± 3.34	14	712.36	± 9.21	12.68	± 9.64	1.32
9	196	698.59	± 3.09	15	699.20	± 11.22	0.61	± 11.64	0.05
10	176	696.07	± 3.03	20	700.60	± 14.84	4.58	± 15.15	0.30
11	162	691.23	± 3.52	23	707.04	± 9.06	14.23	± 9.56	1.49
12	158	693.20	± 3.75	34	711.03	± 8.27	17.83	± 9.08	1.96
13	120	695.60	± 4.20	25	708.44	± 10.00	9.84	± 10.86	0.91
14	68	688.43	± 5.39	8	702.25	± 23.18	13.82	± 23.80	0.58

Mean ratio = 3.032

Mean ratio = 3.032

There were 1,324 girls and 1,399 boys. The percentage of positive reactors was practically the same in each group of children, girls 11.95 per cent and boys 11.94 per cent (table 3). However, when the positive reactors were compared according to age, it was noted that the percentage increased (table 4). At the ages

of 7 and 8 the proportion of positive reactors was lower for the boys than for the girls. At the age of 9 there was almost twice the percentage of positive reactors among the boys as compared to the girls. At the ages of 10 and 11 there was a higher percentage of positive reactors among the boys but the difference was not so

TABLE 3—Incidence of Positive Reactions to the
Tuberculin Test

Sex	Total Number Tested	Positive Mantoux	Percentage Positive
Girls	1,324	158	11.95
Boys	1,399	167	11.94

TABLE 4—Percentage of Positive Reactors According to Age

Age	Girls			Boys		
	No of Cases	Positive Reactors	Percentage	No of Cases	Positive Reactors	Percentage
7	146	19	13.00	142	7	4.93
8	168	14	8.33	109	11	10.09
9	211	15	7.11	183	36	19.67
10	196	20	10.20	194	25	12.89
11	180	23	12.43	200	29	14.50
12	192	34	17.71	183	36	19.67
13	150	25	16.67	112	19	16.96
14	76	8	10.53	94	19	20.21
15				15	5	33.33

marked as at the age of 9. At the ages of 12 and 13 the girls had a definite increase in percentage of positive reactors, whereas the boys tended to show a slight decrease.

COMMENT

This study, which shows that there is a definite correlation between the deep chest and the positive reaction to tuberculin adds one more link to the chain of evidence supporting the contention that the deep chest is more or less associated with tuberculosis. It also helps to explain why there is such a high incidence of tuberculosis among the poor in the slum districts. The children in the slums are physically underdeveloped. They are not only shorter and lighter but they have on the average a deep, primitive, infantile type of chest, one that has not gone through the normal process of development. Even the new-born and infants are shorter and lighter and have a deeper chest than the average infant from a better environment.

It may be well to reiterate here a statement made in a previous report. In many large cities the government is wiping out the slum districts and replacing them with modern, well built and well ventilated homes. This is a constructive, far-reaching piece of work and will do much to reduce the incidence of tuberculosis. In the future one will probably find a better developed child in these districts, not only a child who is taller and heavier than the average child in the present slum but one with a flatter type of chest, and in all probability there will be a marked decrease in the incidence of tuberculosis. Members of the medical profession can advance our aim of eliminating tuberculosis by acquainting the public with the part slums play in the fostering of this disease.

CONCLUSION

It appears that there is a positive correlation between a positive reaction to the Mantoux test and a deep chest in children.

328 Hennepin Avenue

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Bakwin Harry, Bakwin R M and Milgram Lillian. Influence of Retarded Growth. Am J Dis Child 18: 1030 (1934).

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ABSTRACT OF DISCUSSION

DR HARRY BAKWIN, New York The idea that tuberculosis has a constitutional as well as an environmental basis is not new but quantitative demonstration of this relationship is recent and today we have heard one of the only two contributions that I know of in this field, the other was made at Johns Hopkins University by Love, who studied the height and weight of army officers in whom tuberculosis developed. He went back to their old measurements and found that men who were tall and thin tended to develop tuberculosis more often than other groups. It is easy to understand why tuberculous persons should be thinner than other persons but it is a little difficult to understand why tall men should tend to develop tuberculous disease unless the strain of rapid growth which tall people are subjected to during puberty is sufficient to bring out the tuberculous process. I wondered whether Dr Weisman had studied any dimensions other than those of the chest. Is this change in the children infected with tuberculosis limited to the shape of the chest or is this part of a general alteration in body growth? Is it possible that the change in the shape of the chest is due to economic differences between tuberculous and nontuberculous children? I know Dr Weisman took all these children from a parochial school nevertheless I wonder whether it is possible that this was simply a poorer group of children who happened to be infected with tuberculosis or was the difference primarily tuberculous and not simply a social difference?

DR HAVEN EMERSON New York I should like to ask Dr Weisman whether he has any evidence of the relative incidence of tuberculosis in the populations from which these two respective groups of school children were brought. It is well to compare the physical types of children in a less favored group with those of a more favored group but still the cause of tuberculosis is the tubercle bacillus and not the shape of the body, and until the probable frequency of cases and deaths and infection in these different community groups is known, I should say the conclusion he presents remains unproved. There is a further control which Dr Weisman might be asked to present at some future session. There must be children of the well-to-do who also have these underdeveloped or persistently puerile type of chests, and one would like to know whether under the favorable, nontuberculous environment of the well-to-do such children have a higher incidence of tuberculosis than the children with the normal or more adult type of chest as they grow older. One remains uncertain, from an epidemiologic point of view, as to the significance of Dr Weisman's observations until evidence is given of the age-specific prevalence rates of tuberculosis in the communities from which these two sets of children were drawn.

DR L. M. ROHR Brooklyn I should like to ask whether racial groups similar to Dr Emerson's were considered in this study. If so, has Dr Weisman anything to say about the racial groups in it and the measurements of these children?

DR S. A. WLISMAN Minneapolis I could give only a summary of this paper. Time would not permit me to cover in detail all the work which has been done. However I wish to make one point clear. The person having a deep chest will not necessarily contract tuberculosis nor will the possessor of a flat chest find himself because of that advantage immune. It simply means as was shown by Dr Matz in a silicosis group that certain types are more susceptible to the disease. Environments being equal, were that possible, the individual with the flat better developed chest would probably be a little more resistant to the tubercle bacilli than the youngster or grown up having a deeper chest and a lower vital capacity. There was a question by Dr Emerson as to whether or not there are deep chested individuals in better environments. Certainly! These are only averages. However, predominant groups prevail in each district as to the incidence of tuberculosis. I thought I mentioned that there were much higher incidences of tuberculosis in cases reported from the deep-chest predominant districts. In reply to Dr Bakwin's question on certain groups I was careful to see that I measured a cross-sectional area of the city of Minneapolis. I tried to get schools from all sections to get a representative group. After I did all that work and compared the better with the poorer groups there was a definite

correlation. With regard to the racial groups, I took the nationalities when I measured some 19,000 children in a previous study and divided them into eleven racial groups. There was no appreciable difference in the chest contour of these various racial groups. It was only when the children were compared according to their environments that there was any difference in chest development. In adults of course, we have no way of finding whether they have been underdeveloped physically when they were youngsters, it is however very probable, but in the adult we found that a deep chest was the prevailing type among the tuberculous patients.

Clinical Notes, Suggestions and New Instruments

GONORRHEAL SEPSIS IN AN INFANT

REPORT OF A CASE FOLLOWING OPHTHALMIA NEONATORUM

SAMUEL J. HOFFMAN, M.D. AND MAURICE SCHNEIDER, M.D.
CHICAGO

Numerous cases of gonorrheal septicemia have been reported in adults following genital infections with the gonococcus. In children such cases occur but are very unusual, being extremely rare in infants. Sepsis occurring as a result of gonorrheal ophthalmia is practically an unheard of condition.

The case here reported is of interest because of the unusual pathogenesis and the age of the patient.

REPORT OF CASE

A M., aged 4 days, was admitted to Cook County Hospital Feb. 24, 1937 from an outlying hospital. The birth was a precipitous one, the child being premature and weighing 5 pounds (2,268 Gm.). The eyes of the baby had been treated by the Crede method one hour after birth. Vaginal and cervical smears taken from the mother were negative for gonococci.

On examination there was noted a thick, yellow, purulent discharge from both eyes. The conjunctivae were swollen and reddened and smears taken from the pus showed gram-negative intracellular diplococci morphologically resembling gonococci. The diagnosis of gonorrheal ophthalmia was made by clinical appearance and positive smears.

Routine treatment consisted of irrigations of the eyes every thirty minutes with physiologic solution of sodium chloride. In addition three injections of boiled milk (1 cc.) were given for three days intramuscularly. The eyes cleared rapidly, but twelve days after admission the temperature became elevated and swellings were noted in both wrists. The swellings disappeared in eight days but new swellings appeared in both knees. Fluctuation became apparent and aspiration of the right knee yielded purulent fluid, but no gonococci were found on smear or by culture. Blood cultures taken at this time showed gonococci.

Examination of the blood revealed hemoglobin 49 per cent (Tallqvist), red blood cells 3,000,000 and white blood cells 12,500 of which 43 per cent were polymorphonuclear leukocytes and 57 per cent were lymphocytes. The Wassermann reaction was negative. Roentgenograms of the wrists and knees were reported negative.

Following the onset of the clinical gonorrheal arthritis the course was continually down grade. Death occurred April 4, when the infant was 43 days old. Prior to the end, the eyes were pronounced cured. Vaginal smears taken repeatedly were negative and no purulent discharge was noted from the vagina. Final clinical diagnosis was gonorrheal septicemia and arthritis.

Postmortem examination confirmed the clinical diagnosis.

Fluid taken from the right knee revealed gonococci culturally and morphologically.

In the spleen gonococci were found and diagnosed morphologically and culturally.

While parenchymatous degeneration of the myocardium was found the endocardium and valves were normal.

From the Department of Pediatrics of the University of Illinois College of Medicine and the Cook County Children's Hospital.

COMMENT

In reviewing the reported cases of gonococcemia, it is noted that in most cases ulcerative endocarditis occurred following a genital infection. In children all such cases followed a gonorrheal vaginitis. The clinical symptoms of a gonococcic septicemia differ in no essential features from sepsis due to other organisms. Of interest in this report are the facts that the child had received the Crede treatment and that all smears taken from the mother were negative for gonococci.

185 North Wabash Avenue

METHOD FOR REMOVAL OF A PLASTER CAST

MILTON H. PROSPERI, M.D., WASHINGTON, D. C.

The removal of a plaster cast, while a comparatively simple matter, is accompanied by difficulties that make the procedure at times very trying and vexatious.

Most cutters are designed to cut through the cotton and the plaster at the same time, but this is rather difficult to perform

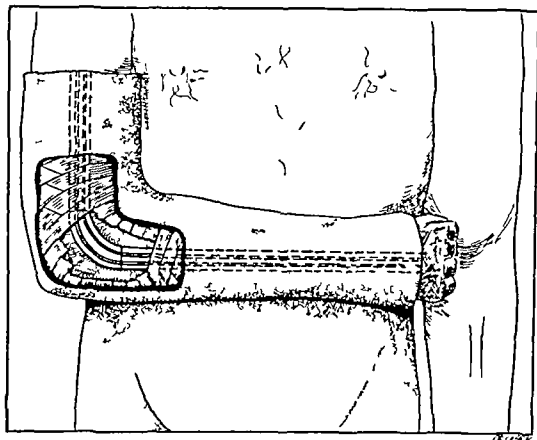


Fig 1—Course of metal channels

at one operation, being attended by considerable discomfort to the patient and at times causing traumatism to the skin as well. In view of these circumstances I have designed and used a

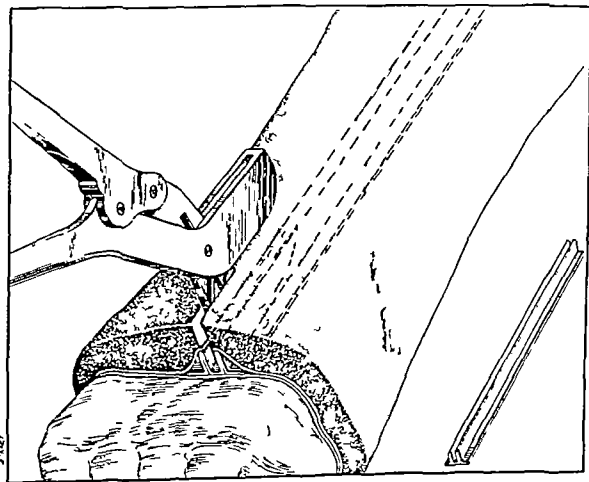


Fig 2—Method of cutting

method that facilitates the removal of a cast without undue difficulty and in a rapid and smooth manner and without injury to the patient.

This method consists of metal channels which are placed on top of the cotton or stocknet and held in place by two or three strips of adhesive tape, after which the plaster bandage is applied over them. The accompanying illustrations show the manner in which they are made and the position and method in which they are applied. As will be noted, the metal strips

contain a slot with a metal base, which allows the blade of the cutters to slide along in a free and easy manner, cutting through the plaster. Any one wishing to use a cast knife or any other instrument for removing a cast can do so with perfect ease, using as much pressure as desired without injury to the patient.

When it is desirable to use these channels in a cast which forms an angle such as at the knee or elbow joint or any other location, metal curves or arcs are provided which fit in the ends of the straight channels, forming a continuous groove, thus permitting the cutters to travel in one direction until the cast has been completely cut through. In cases of a full cast on the leg and thigh it is astonishing with what ease and rapidity a long cast of this kind can be removed, leaving smooth edges in case one wishes to tape them and reapply the cast.

Two or more channels may be applied to the same cast if necessary. They add to its strength and show only the slightest irregularity after completion. Also there is no need to cover the top of the groove with adhesive tape or other material, as the plaster does not clog the groove. It is also necessary to wrap some of the plaster bandage over each end of the channel to prevent rubbing the skin, but this is a minor consideration, as the cutters can be entered without difficulty.

These strips may be made of aluminum, are inexpensive and are not radiopaque, thereby causing no interference when it is desirable to make another exposure after the cast has been applied. They are indestructible, can be used indefinitely and certainly make of a tedious task an easy and satisfactory one.

216 Eighth Street S E

Special Clinical Article

GONOCOCCIC ARTHRITIS: PATHOGENESIS, MECHANISM OF RECOVERY AND TREATMENT

CLINICAL LECTURE AT ATLANTIC CITY SESSION

CHESTER S. KEEFER, M.D.

AND

WESLEY W. SPINK, M.D.

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In an investigation of various types of arthritis, we have made detailed studies and observations on patients with gonococcic infections involving the joints. Particular interest has been taken in the pathogenesis of this disease, together with the mechanism of recovery. At this time we present a summary of the results of this study.

DIAGNOSTIC CRITERIA

The diagnosis of gonococcic arthritis was made on the following grounds: (1) a history of a recent attack of gonorrhea, (2) evidence of a localized gonococcal infection of the genital tract, (3) a positive reaction to the gonococcus complement fixation test on the blood and/or synovial fluid, and (4) the demonstration of gonococci in the synovial fluid.

CLINICAL FEATURES OF GONOCOCCIC ARTHRITIS

During the past five years, 140 cases of gonococcic arthritis have been observed and studied. Sixty-nine cases were summarized previously,¹ and we now add seventy-one more cases to this first group. A number of features aside from the arthritis deserve comment.

Read at the General Scientific Meetings at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., 1937.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard), Boston City Hospital and the Department of Medicine, Harvard University Medical School.
1. Myers, W. K. and Keefe, C. S. Gonococcal Arthritis. A Clinical Study of Sixty-Nine Cases. Ann. Int. Med. 8: 581 (Nov.) 1936.

Many of the outstanding characteristics of these cases are summarized in table 1. The course of events is usually as follows:

Subsequent to a gonococcic infection of the urethra or uterine cervix, less frequently of the conjunctiva or rectum, an acute polyarthritis appears. It is often abrupt in onset and is accompanied by all the signs of an intense inflammation involving periarticular tissues and synovial membrane. There are pain, redness and tenderness with limitation of motion. The process is more often polyarticular than monoarticular. The joints most frequently involved are the knees, ankles and wrists, although any joint of the body may be affected. There is often intense tenosynovitis about the wrists and ankles and in some instances the tendon sheaths are involved without any conclusive signs of associated arthritis. Tenosynovitis is much more common in patients with gonococcic arthritis than in patients with other types of arthritis and is a valuable diagnostic sign. The arthritis may be preceded by an infection of the respiratory tract, so that this feature may temporarily obscure or confuse the diagnosis. In most cases the arthritis begins within ten to twenty days after the onset of gonorrhea, however, we have seen cases of acute arthritis due to the gonococcus occur months or years after an attack of gonorrhea and, in some instances, after the original infection of the genito-urinary tract had healed entirely. In one case, acute arthritis followed a pelvic operation on a woman 65 years of age, and we were able to isolate the organisms from the synovial fluid. Smears and cultures from the cervix uteri were negative for the gonococcus, and no history of a localized genito-urinary infection could be elicited. In a few cases gonococcic arthritis is associated with pregnancy.

There are usually fever, leukocytosis and elevation of the corrected sedimentation rate. The process is most intense within the first few days of onset and does not tend to be migratory unless there is trauma to the local focus of infection in the genito-urinary tract. We have observed exacerbations of the arthritis after a vigorous prostatic massage as well as after reinfection. Frequently, after the acute onset the process becomes most conspicuous in one or more joints where the features of the infection are most intense.

The symptoms of the acute process persist for an indeterminate period, and many persons are disabled for several weeks or months.

Accompanying the acute process in the joints and tendon sheaths there is rapid wasting of the muscles supporting the affected joints. Histologic examination of muscle in the immediate neighborhood of the joints has failed to reveal evidence of acute inflammation.

Demonstrable bacteremia is unusual unless there is associated endocarditis. We have observed three cases of bacteremia without endocarditis, and certain of the features are worthy of comment. One of the striking features is the cutaneous eruption. It is maculopapular, and in some areas it is hemorrhagic and rapidly becomes vesicular and then pustular. The eruption is most intense over the extremities but appears on the trunk as well. In one of our cases it was accompanied by hepatomegaly, splenomegaly, jaundice and thrombopenia. Another clinical feature, in a second patient, was a tendency for the fever to show periodic exacerbations every forty-eight hours. In the third case with bacteremia the blood stream was cleared of organisms after the injection of specific antigonococcic immune

horse serum (Parke-Davis). We have not observed a cutaneous eruption of the character mentioned without bacteremia.

The ocular signs of the infection are most interesting and important, since they aid in diagnosis, and when there is iridocyclitis add to the seriousness of the disease. The commonest is metastatic catarrhal conjunctivitis, which occurs in from 10 to 20 per cent of the cases. In common with other observers, we have found that the exudate from the conjunctivae in these cases is sterile and may appear at the same time as the arthritis or precede it. Conjunctivitis often disappeared before the arthritis and caused no permanent damage. It is more common in persons who have a sterile than an infected effusion into the joints. Iridocyclitis is a much more serious complication, since it may lead to permanent impairment of vision.

TABLE 1—Summary of Clinical Features in 140 Cases of Gonococcic Arthritis

1 Sex—Males	104	
Females	36	
2 Polyarthritis	107	
Monoarthritis	33	
3 Joints Involved		Tenosynovitis
Knees	127	4
Ankles	56	32
Wrists	44	19
Metacarpophalangeal	27	6
Shoulders	25	
Metatarsal and laryngeal	27	6
Fingers	31	4
Hips	23	
Elbows	20	
Lumbar part of spine	14	
Toes	19	
Sacro iliac	8	
Heels	7	
Cervical part of spine	6	
Dorsal part of spine	4	
Sternoclavicular	3	
Costosternal	2	
Temporomandibular	3	
Olecranon bursa	1	
Acromioclavicular	1	
4 Associated Features		
Conjunctivitis	21	
Abscess of tendon sheath	2	
Death	7	
Endocarditis	2	
Glomerulonephritis	1	
Intercurrent pneumonia	3	
Progressive gonococcic infection	1	
Iridocyclitis		4
Glomerulonephritis		2
Pregnancy		4
Bacteremia		5
Recovered	3	
Died	2	
Endocarditis		2
Keratoderma blennorrhagicum		4
Sterile meningitis		1

A rare form of cutaneous eruption accompanying this infection is keratoderma blennorrhagicum, of which we have seen four cases. The characteristic lesion is most prominent on the plantar surfaces of the feet. There is thickening of the skin, with the edges of the lesion showing a sharp line of demarcation. Toward the center of the lesion there may be necrosis and sloughing, which gives a "relief map" appearance. The skin between the toes may be thickened, moist and adherent. Smaller lesions may be seen on the arms and legs. These are firm, reddened, raised and waxy looking. Other lesions are scaly and simulate psoriasis.

A combination of arthritis and conjunctivitis, or arthritis and the cutaneous eruption of keratoderma, is always suggestive of gonococcic infection. While it is true that conjunctivitis is an associated feature of postdysenteric arthritis and in rare instances of rheumatic fever, it is more common with gonococcic infection.

A rare complication in the absence of endocarditis is acute hemorrhagic glomerulonephritis,² of which we have seen two cases. All the features of hemorrhagic nephritis are present, and in our one case with necropsy the lesions in the kidney were those of sterile diffuse glomerulonephritis.

One may say then that acute polyarthritis associated with tenosynovitis, a history of gonococcic infection, conjunctivitis or iridocyclitis, and a cutaneous eruption resembling psoriasis are always suggestive of gonococcic arthritis.

THE PATHOLOGIC FEATURES OF GONOCOCCIC ARTHRITIS

Keefer, Parker and Myers³ have examined the knee joints of two patients who had active gonococcic arthritis at the time of death. The first patient had a sterile synovial fluid, and no gonococci were recovered from the joints at necropsy. No organisms could be observed in the stained sections. In a second case gonococci were grown from the synovial fluid, and they were observed with ease in the stained section of the synovial membrane. These cases represented what is so often seen in clinical practice, namely, a type of arthritis associated with gonococcic infection and a sterile synovial fluid and a second type, in which the synovial fluid is infected. In the case in which the organisms were observed, the synovial membrane had been completely destroyed and replaced by granulation tissue containing numerous lymphocytes, polymorphonuclear leukocytes, macrophages and plasma cells. In the deeper layers of the synovia there was a perivascular infiltration of lymphocytes. The sections stained for bacteria showed numerous gram-negative cocci which were identified as gonococci, since this organism had been recovered from the tissues by cultural methods. There was little change in the cartilage overlying the articular surface.

Examination of the synovial membrane from the knee joint in which gonococci were demonstrated showed a proliferation of the synovial membrane, with increase in thickness and collections of polymorphonuclear leukocytes. In the subsynovial tissue layer or connective tissue layer there was a marked infiltration with polymorphonuclear leukocytes, lymphocytes and macrophages, with intense congestion of the blood vessels. An occasional macrophage filled with blood pigment was seen. In several foci there was a partial loss of the superficial synovial cells, with a deposit of fibrinous thrombi. In places the collagen and polymorphonuclear leukocytes appeared necrotic. A careful search of the tissue stained for bacteria failed to reveal their presence.

It would appear that the inflammatory lesions in the synovial membrane in patients with sterile synovial fluid are much less intense than in those with infected fluid. In the former the surface layer of the synovia remains intact and shows no areas of destruction, while in the latter there is complete destruction of the synovial lining, with replacement by granulation tissue. In the one case the conspicuous lesions are beneath the surface of the synovia, whereas in the other they extend to the surface and produce complete destruction of the superficial cells.

Destruction of the articular cartilage varies considerably in different cases of gonococcic arthritis,

depending apparently on the joints involved. It is most pronounced in the wrist and phalangeal joints, the hip and the ankle joints. It is less conspicuous in the knee joints. This may be accounted for in part by the fact that in the knee joint large amounts of fluid collect, whereas in the other joints mentioned there are a great many white blood cells and relatively small amounts of synovial fluid. Studies on the antitryptic content of synovial fluid and the tryptic activity of white blood cells in digesting cartilage suggest that the articular cartilage in the knee joint is protected in many cases by the presence of a large effusion of fluid which contains antitryptic substances. When the exudate is thick and purulent and contains a relatively large number of leukocytes and a relatively small amount of synovial fluid, the opportunities for the destruction of cartilage are great.

Ankylosis of joints associated with gonococcic arthritis is due to periarticular fibrosis or adhesions between the articular cartilage. In the case of the knee joint, stiffness and limitation of motion are often due to adhesions between the patella and the femur. True bony ankylosis is rare except when the wrist joints are involved.

TABLE 2—Summary of 114 Samples of Synovial Fluid from Eighty-Three Patients with Gonococcic Arthritis

	Per Cent	Total Number of Cells per Cu. Mm.	Differential Cell Count per Cent					Chemical Examination		
			Polymorphonuclears	Lymphocytes	Monocytes	Glasmantocytes	Eosinophils	Total Protein Gm per 100 Cc.	Sugar Mg per 100 Cc.	Nonprotein Nitrogen, mg per 100 Cc.
Infected fluid	26	7 000 236 000	75-100	0.14	0.8	0.12	0.2	4.5-6.0	0.99	16
Sterile fluid	74	1 600 120 000	40-100	0.12	0.0-0.022	0.2	3.0-6.0	5.138	16-40	1

CHARACTERISTICS OF THE SYNOVIAL FLUID

Several years ago the characteristics of the synovial fluid of forty-one patients with gonococcic arthritis were defined.⁴ Since then, additional information has been obtained from forty-two patients. In all, we have examined 114 samples of synovial fluid from eighty-three patients. The results are summarized in table 2 and may be commented on in further detail.

For analysis of results, the data were separated into those on samples of infected fluid and those on samples of sterile fluid. There were differences in the characteristics of these two types of fluid quite independent of the presence or absence of bacteria. In general, the total cell count is likely to be higher, with more polymorphonuclear cells, in the infected fluids than in the sterile ones. The total protein content is that of an exudate in both types, and the nonprotein nitrogen is the same as in the blood. The sugar content in infected synovial fluids is lower than that of the blood, whereas in sterile effusions it is the same.

BACTERIOLOGY OF THE SYNOVIAL FLUID

The synovial fluid of seventy-eight patients was cultured immediately on withdrawal from the synovial cavities. The gonococcus was recovered from the fluid

² Spink, W. W. and Keefer, C. S. The Dermal and Renal Complications of Gonococcal Arthritis. *New England J. Med.* 217: 241 (Aug. 21), 1937.

³ Keefer, C. S., Parker, Frederic Jr. and Myers, W. K. Histologic Changes in the Knee Joint in Various Infections. *Arch. Path.* 18: 199 (Aug.) 1934.

⁴ Keefer, C. S., Myers, W. K. and Holmes, W. F. Jr. Characteristics of Synovial Fluid in Gonococcal Arthritis. *J. Clin. Invest.* 13: 767 (Dec.) 1934.

in only 26 per cent of the seventy-eight cases. All the cultures were carried out in an anaerobic jar. This method has been much more efficient in detecting the presence of organisms than the use of stained smears. We have been able to cultivate organisms from the synovial fluid when they were not observed on smear preparations, and we have never failed to cultivate them if they were seen on a stained smear. To explain the relatively small number of cases in which cultures were positive, we studied the various serologic reactions in the synovial fluid to determine whether antibodies bactericidal for the gonococcus could be detected.

SEROLOGIC REACTIONS OF THE SYNOVIAL FLUID

Gonococcus Complement Fixation Test—The reaction to the gonococcus complement fixation test is positive in about 66 per cent of the cases of gonococcal arthritis when the test is carried out on the synovial fluid. It is higher in patients with sterile effusion than in those with infected fluid. A positive complement fixation reaction of the synovial fluid was never seen without a positive reaction of the blood serum.

Bactericidal Action of the Synovial Fluid—When the bactericidal action of the synovial fluid was examined it was found that no bactericidal antibodies were present in infected fluid, and the bactericidal power of the whole blood was low or only moderately elevated. In the sterile synovial fluid one could invariably detect antibacterial antibodies, and either the synovial fluid and blood showed the same bactericidal action or the fluid showed less bactericidal action than the blood. Synovial fluid obtained from patients with nongonococcal arthritis was not bactericidal for the gonococcus. Such observations suggest that the reason for the relatively large number of examples of sterile synovial fluid in cases of gonococcal arthritis is the presence of a relatively high titer of specific antibody.

When specific antigonococcal immune serum was added to synovial fluid *in vitro*, bactericidal action was enhanced, so that there seemed to be little doubt that the bactericidal power of the synovial fluid was due to the presence of antibodies.

Antitryptic Substances in Synovial Fluid—The destruction of cartilage accompanying various forms of arthritis varies considerably, and it is probably due in part to the balance existing between the ferments of the leukocytes plus the infecting organisms and the antiferment substances in the synovial fluid. From experiments recorded elsewhere,⁵ it was concluded that synovial fluid contains substances which are capable of inhibiting tryptic digestion. When large numbers of white blood cells were present, particularly polymorphonuclear leukocytes, the antitryptic power was usually reduced. The synovial fluid from patients with gonococcal arthritis was capable of inhibiting the digestion of cartilage by leukocytic autolysates. It appears that the presence of large amounts of antitryptic substances in the synovial fluid prevented or at least limited the destruction of articular cartilage by the enzymes liberated in the purulent exudates. These observations are consistent with what one sees clinically, namely, that the destruction of cartilage in cases of gonococcal arthritis occurs in the joints which contain a thick purulent exudate and is unusual in other joints when the cell content is low and the amount of fluid is relatively large.

EFFECT OF MUCIN ON THE BACTERICIDAL ACTIVITY OF SYNOVIAL FLUID

One of the problems of considerable interest and importance is to determine the factors responsible for the localization of gonococci in the joints. From clinical observations it is evident that the gonococcus localizes and survives in areas which are supplied by large amounts of mucin, that is, the urethra, cervix, uteri, conjunctiva and joints. This suggested that perhaps mucin was a favorable medium for the growth of the gonococcus or possibly provided an environment that aided the gonococcus in surviving. Our studies indicate that the presence of mucin in synovial fluid assists some strains of gonococci in surviving, especially when the antibody content of the fluid is low. When the antibody content is high it continues to be operative in spite of the presence of mucin.

SEROLOGIC REACTIONS IN THE BLOOD

Bactericidal Tests—The gonococcus has only rarely been isolated from the circulating blood of patients with gonococcal arthritis. We have observed three such

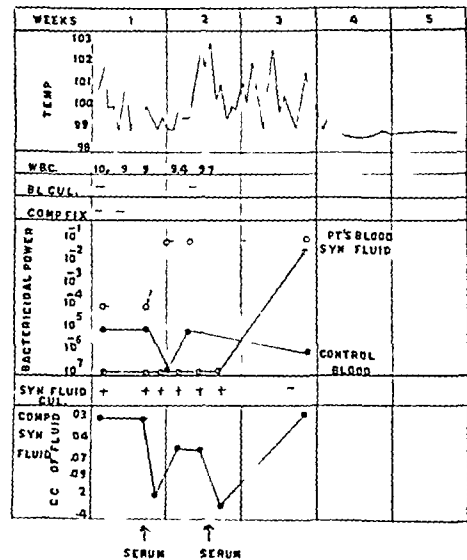


Chart 1—The course of a case of gonococcal arthritis with infected synovial fluid. The arrows indicate the time of injection of 30 cc of antigenococcal horse serum into the knee joint. The temperature curve indicates the highest and lowest daily temperatures. The white blood count is recorded in thousands. The complement titer of the synovial fluid is recorded in cubic centimeters. The bactericidal power is the total number of organisms killed in 0.5 cc of the patient's blood or synovial fluid. 10^{-1.5} dilution contained four organisms.

cases. In these cases it was not possible to demonstrate antibacterial antibodies in the circulating blood while organisms were present. When the organisms disappeared spontaneously from the circulating blood in one case, antibodies made their appearance. In another case⁶ the blood was cleared of bacteria after the injection of antigenococcal immune serum, and there followed an increase in the bactericidal power of the blood. It would appear that the absence of bacteremia in most cases of gonococcal infection may be explained on a basis of the antibody content of the blood or an efficient local defense mechanism in the urethra and elsewhere. The bactericidal action of the whole blood has been studied in patients with urethritis and in those with arthritis and the results recorded elsewhere.⁷ It

6. Keefe C. S. and Spink W. W. The Use of Antigonococcal Serum, Gonococcal Vaccine and Filtrate in the Treatment of Gonococcal Infection. *Am J Syph. Gonorr. & Ven. Dis.* 21: 241 (May) 1937.
7. Spink W. W. and Keefe C. S. Studies of Gonococcal Infection. II. The Bactericidal Power of the Whole De fibrinated Blood of Patients with Gonococcal Arthritis. *J. Clin. Investigation* 16: 17 (March) 1937.

5. Holmes W. F. Jr., Myers W. H. and Keefe C. S. The Inhibition of Tryptic Digestion of Cartilage by Synovial Fluid from Patients with Various Types of Arthritis. *J. Clin. Investigation* 14: 131 (Jan) 1935.

was found that the bactericidal action of whole defibrinated blood for the gonococcus in vitro depended on the combined action of antibody and complement, and this could be demonstrated without the presence of cells. It was also noted that the bacteriolytic titer of the blood of patients with gonococcic arthritis increased during the course of the disease. In patients with gonococcic urethritis, antibodies could be detected as the disease progressed. In some of the patients with urethritis the presence of antibodies in the circulating blood was shown not to prevent the local infection from persisting or spreading, and many strains of the organisms capable of producing urethritis could be killed in considerable numbers by the blood of normal controls. There is evidence then that the localization of organisms in the joints is due in part to an efficient clearing mechanism of the blood and that this efficiency is partly the result of the development of antibodies to the specific organism.

Gonococcus Complement Fixation Test on Blood—One test of considerable value in the diagnosis is the gonococcus complement fixation test. Several years ago Myers and Keefer⁸ reported the results of this test on the blood and the synovial fluid of forty-one patients with gonococcic arthritis. Then, as now (forty-two additional cases), we found that the reaction is positive in about 85 per cent of cases of gonococcic arthritis.

COMMENT

It may be stated then that during the course of gonococcic infection antibodies appear in the circulating blood. These antibodies may be an indication of a response on the part of the host to the infection and are probably largely responsible for the localized infection and recovery of the patient. After the development of specific antibodies of a sufficiently high titer to kill the infecting organism, the process of repair proceeds in the joints. This course of events is illustrated in chart 1.

A number of features of the disease continue to remain obscure. For example, why do the patients show a latent period between the development of the local infection and the arthritis? What is the mechanism involved in the development of the bilateral catarrhal metastatic conjunctivitis? Why do patients have recurrent effusions into the joints of sterile fluid of high antibody titer? These questions require an answer, and when their explanation becomes clear more information will be available for an understanding of the pathogenesis of the disease.

TREATMENT OF GONOCOCCIC ARTHRITIS

The main objective in treating gonococcic arthritis is to remove the cause, give relief from symptoms and restore normal function to the joints. Methods of treatment which aim to destroy the organisms are naturally the most promising so far as complete recovery is concerned. To accomplish destruction of the organisms three general methods have been used: (1) specific serum therapy, (2) fever therapy and (3) chemotherapy.

Specific serum therapy has not been very successful in the treatment of gonococcic arthritis. We have been able to clear the circulating blood of organisms in cases of bacteremia but in several cases in which serum has been injected directly into the joint cavities the results

have not been successful. It would appear that serum therapy should be limited to cases of bacteremia.

Within the past few years considerable interest has been shown in fever therapy of gonococcic arthritis. The main objective of this form of treatment is to increase the body temperature to such a level that the organisms are killed. The treatment has had an enthusiastic reception, and a number of reviews are now available.⁹ There seems to be almost universal agreement that it is effective in a high percentage of cases in which the disease is acute. Its effect is less striking in cases of chronic and long standing disease.

More recently there has been a revival of chemotherapy in the treatment of gonococcic infection, and our experience with the use of sulfanilamide in the treatment of local infections of the genito urinary tract and arthritis is worth mentioning. We have treated three patients with gonococcic arthritis with this drug. In two the synovial fluid was infected, in the third it was sterile. In the two patients with an infected fluid,

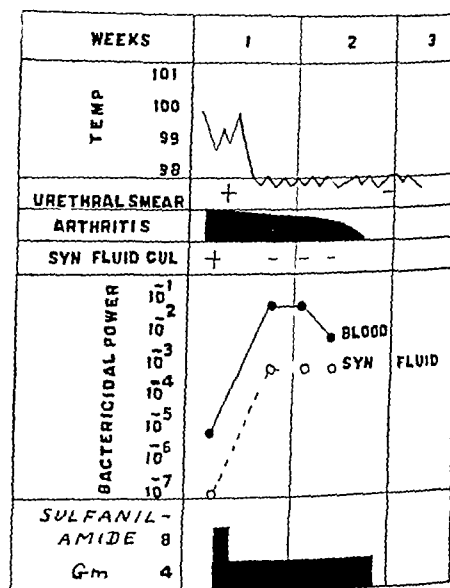


Chart 2—The course of gonococcic infection following treatment with sulfanilamide.

the synovial fluid was sterilized within two days after the drug was given, and the organisms could not be obtained from the local lesions in the genito urinary tract. Chart 2 illustrates the course of the changes in the cultures and in the bactericidal content of the blood and the synovial fluid in one of these cases. We have not been able to sterilize the synovial fluid in other cases with other forms of treatment within such a short period. This form of treatment deserves a thorough and critical investigation.

Our plan of treatment has varied with individual cases. We have made it a rule to aspirate all joints showing an increase in the synovial fluid. Studies of the fluids may provide one with information regarding diagnosis, prognosis and further treatment. The patients who had a sterile synovial fluid with a total cell count of less than 40,000 usually did much better than far as the ultimate outcome was concerned. When the fluid

⁸ Myers, W. K. and Keefer, C. S. The Gonococcal Complement Fixation Test in the Blood and Synovial Fluid of Patients with Arthritis. *New England J. Med.* 211: 101 (July 19) 1934.

⁹ Hench, P. S., Slocumb, C. H. and Popp, W. C. Fever Therapy: Results for Gonorrheal Arthritis, Chronic Infection (Atypical) Arthritis and Other Forms of Rheumatism. *J. A. M. A.* 101: 1779 (May 14) 1933. Schnabel, T. G. and Fetter, Ferdinand J. Fever Therapy in Gonorrheal Arthritis and Chorea. *Ann. Int. Med.* 9: 393 (Oct 1) 1933. Hench, P. S., Bauer, Walter, Fletcher, A. A., Gribb, J. H., Francis, and White, T. P. The Problem of Rheumatism and Arthritis. *Review of American and English Literature for 1933.* *Ann. I.* 10: 724 (Dec) 1936.

was infected and contained large amounts of mucin and fibrin, so that aspiration was difficult, the joints were opened and irrigated through a small incision in the capsule. After the joint was washed out, it was closed tightly and placed in traction, and motion was started as soon as it was possible without pain or discomfort. We repeat that it has been desirable to limit this form of treatment to patients showing a thick, fibrinous, infected fluid.

GENERAL TREATMENT

As this disease is likely to be protracted, the patients present the clinical picture which is so common with chronic infections. They often lose weight and have anemia, and the muscles about the affected joints atrophy. Attempts are therefore made to provide a liberal intake of food, to treat the anemia with iron and/or blood transfusions and to treat the patient symptomatically for the relief of his pain and discomfort.

The convalescence is often a difficult stage to manage, since it is frequently prolonged over a period of some weeks. The following procedures should be carried out: (1) Efforts should be made to reestablish muscle tone about the affected joints through active and passive motion exercises, (2) the arches of the feet should be given support if the patient has been confined to bed for a long period, and (3) instructions should be given regarding prophylaxis against venereal disease.

In general, it may be said that the patients who do well are those with a sterile effusion into the joints and that those who do badly are those with infected synovial fluid. It is noticeable that patients with involvement of the wrist and hip joints do not recover so completely as those who have only the knee joint affected.

SUMMARY AND CONCLUSIONS

A study of 140 cases of gonococcal arthritis leads to the following statements:

1 Gonorrhea is a frequent cause of acute polyarthritis, and, while any joint may be affected, gonococcal arthritis is most often seen in the knees, wrists and ankles.

2 Associated lesions, such as tenosynovitis, bilateral metastatic catarrhal conjunctivitis, iridocyclitis and keratoderma blennorrhagicum, are helpful clinical aids in the diagnosis.

3 The pathologic lesions in the joints begin in the periarticular tissues and synovial membrane, and involvement of the cartilage is secondary. Destruction of cartilage is most conspicuous in the wrist, hip and finger joints. Bony ankylosis is rare except in the wrist joints. Fibrous ankylosis is more common.

4 Examination of the synovial fluid is helpful in diagnosis. Organisms were isolated in 26 per cent of the cases. The fluid had all the characteristics of an exudate. The average total cell count was higher for the infected fluid than for the sterile fluid.

5 *Gonococcus* complement fixation and bacteriolytic antibodies diffuse into the synovial cavities.

6 The antibody content of synovial fluid is the same or slightly less than that of the blood when the fluid is sterile. When it is infected, antibodies are not demonstrated.

7 The synovial fluid contains antitryptic substances which probably protect the cartilage from destruction by the tryptic-like ferments of the leukocytes.

8 The gonococcus complement fixation test on the blood gave a positive reaction in 86 per cent of the

cases. The percentage of positive reactions was somewhat lower for tests on the synovial fluid, especially when the fluid was infected.

9 The mucin in synovial fluid interferes with the destruction of organisms when the antibody titer is low. When the antibody titer rises, there is no apparent depression of the activity of the fluid.

10 The blood plasma of patients with gonococcal infections is actively bactericidal for the homologous strain of infecting organism. The bactericidal activity increases during the course of the disease.

11 There is suggestive evidence that recovery from gonococcal arthritis is associated with the development of increased resistance to the invading organism.

12 There are various types of treatment. There is evidence that sulfamidamide is bactericidal for the gonococcus when it is added to blood serum. In two patients with infected synovial fluid the gonococci disappeared from the fluid within two days after this drug was administered. This type of treatment deserves further study and investigation.

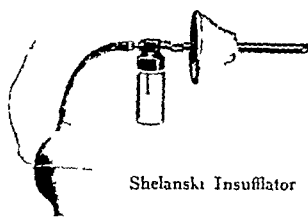
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
HOWARD A. CARTER, Secretary

SHELANSKI INSUFFLATOR ACCEPTABLE

Manufacturer: John Wyeth & Brother, Inc., Philadelphia

This device is used for insufflating the vagina with silver picrate powder in the treatment of *Trichomonas vaginalis* vaginitis. The powder has been accepted for this purpose by the Council on Pharmacy and Chemistry (*THE JOURNAL*, July 3 1937, p. 29). In appearance, the instrument is similar to an atomizer. A rubber bulb and orifice guard are attachable to a brass stem, chrome-plated over a subcoating of nickel. The medicated powder, in a vial with a thread top, can be screwed



Shelanski Insufflator

directly onto the Insufflator. The unit is simple in construction and readily sterilized. It is not patented, nor is it sold under any trade mark. The firm name "Wyeth" is imprinted on it.

According to the firm, the instrument makes possible a thorough dispersion of the medicated powder by permitting mild distention of the vaginal walls so that folds and crevices become accessible to the medicament. The firm submitted evidence from a reliable investigator to support the therapeutic claims made for the Insufflator in the form of a report on 100 cases treated with this instrument and a silver picrate kaolin powder.

In all these cases the diagnosis of *Trichomonas vaginalis* vaginitis was made. Sixty-two cases were observed for six months and thirty-eight for nine months.

The following treatment procedure was employed. The patient was placed in a lithotomy position and 5 Gm. of silver picrate-kaolin powder was blown into the vagina by means of the Insufflator, care being taken to use only enough pressure to balloon out the vaginal walls. The patient was also given six vaginal suppositories of silver picrate, one to be used each night, and she was instructed to return in one week. At this time a smear was taken and the foregoing treatment repeated. The patients were examined for *Trichomonas* seven and fourteen days after the original insufflation, and also at the end of each menstrual period for the next six to nine months. Cultures of the vaginal secretion were made each time.

There were three recurrences in this group occurring at the fifteenth, eighteenth and twenty-first week after the original treatment in three patients. Two of these were again treated

and remained negative up to their last appearance at the clinic, at the seventeenth and twenty-second week following the second course of treatment. At the end of the two week period of treatments it was found that the discharge disappeared in 90 per cent, the itching in 94 per cent and the burning in 96 per cent of the 100 patients, and smears and cultures were negative in 100 per cent.

The firm's investigator reported that the percentage of cases receiving symptomatic relief was high and recommended the instrument for this reason as well as because of the simplicity with which it operates. The incidence of recurrence is low with this type of treatment, according to the report.

An investigator was appointed by the Council to use the unit in his office practice in treating gynecologic diseases. He reported that it was satisfactory for the purpose for which it was intended.

In view of the foregoing report, the Council on Physical Therapy voted to include the Shelanski Insufflator in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH Secretary

THE USE OF HYDROQUINONE AS A "STABILIZING" AGENT IN PREPARATIONS CONTAINING VITAMIN A

Edible oils are known to take up atmospheric oxygen at a comparatively slow rate over a period of time, called the induction period, and then undergo rather extensive chemical change with rapid uptake of oxygen. Vitamin A is susceptible to oxidation and it has been shown that certain measures which are effective in the retardation of oxidation of a vitamin A-containing oil tend to preserve vitamin A. For some time it has been known that the use of small amounts of hydroquinone will extend the induction period of an oil. Certain firms marketing accepted brands of fish liver oils have used this drug as an antioxidant and in some cases the use of it has been so emphasized in the promotion of the product that it might well have given rise to the assumption that the vitamin A content of the preparation concerned was "stable" under conditions of ordinary use. The Council questioned this assumption and questioned indeed the evidence for the necessity of the addition of hydroquinone to these products. The Council asked manufacturers of accepted products to submit evidence that the addition of hydroquinone is a necessity for the proper preservation of cod or halibut liver oils under conditions of ordinary usage.

In this connection attention was called to the possible harmfulness of the ingestion of hydroquinone, but after investigation the Council held that the available evidence does not indicate that the amount of hydroquinone likely to be ingested with the vitamin-containing oils to which it may be added would be injurious. At the present time it may be stated that there is no concrete evidence indicating injury from ingestion of such oils as marketed, containing hydroquinone. Attention was called, on the other hand, to the fact that it is equally true that no data are available excluding this possibility following the use of such materials over long periods of time.

In the Council's discussion it was brought out that, if the addition of hydroquinone to halibut liver oil is approved, it will furnish an undesirable precedent for the use of a number of antioxidants in a wide variety of pharmaceutical products. The Council is informed that the meat inspection regulations of the Department of Agriculture prohibit the addition to meat and food products of preservatives or chemicals designated as antioxidants.

The Council considered the evidence submitted by the firms for or against the use of hydroquinone as a stabilizing agent in fish oils and came to the conclusion that they had failed to

demonstrate that under ordinary conditions of use the loss of vitamin A from halibut liver oil or cod liver oil is excessive. The Council therefore voted disapproval of the use of hydroquinone as an antioxidant in vitamin preparations and further that in the light of present day evidence no accepted vitamin preparation may retain that status if such antioxidant is used.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED ACCORDING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADDITION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

SULFANILAMIDE (See THE JOURNAL, July 31, 1937, p 358, and Supplement to N N R, p 17)

The following revision of the published description, extending the allowable claims, has been adopted.

Actions and Uses—Originally it was reported that sulfanilamide acts against Lancefield's group A strains of hemolytic streptococcus by virtue of an apparently specific effect on these organisms. More recent clinical evidence suggests that the action of this chemical may affect other organisms, especially certain gram-negative cocci. The evidence suggests that its action may be antibacterial.

Sulfanilamide has been used primarily in infections due to beta-hemolytic streptococci, especially in the treatment of puerperal fever, erysipelas, hemolytic streptococcus septicemia, streptococcal sore throat and surgical infections with hemolytic streptococcus. Present studies indicate that this drug is useful in the treatment of gonococcal infections. In some cases the results have been most striking, while in others the drug has not proved especially efficacious. In this connection it is well to note that the reactions following the administration of the drug are at least occasionally of a serious nature (see below). It has also been used in the treatment of gonorrheal vulvovaginitis in young girls but recovery from the condition has not been permanent with this agent. The literature also indicated usefulness in meningococcal infections and possibly gas bacillus infections. It must be remembered however that because of the extensive application of this relatively new therapeutic agent its use in these conditions requires caution and careful observation. This is especially true in view of the reactions which are discussed in the following paragraph. The evidence is incomplete at the present time for further consideration of the possible usefulness of this drug in infections by *Bacterium coli*, *Bacterium typhosum*, and paratyphosum A and B, as well as all varieties of *Brucella*. There is some indication that it is useful in pneumonia due to type III pneumococci.

It must be remembered that acidosis sometimes follows the administration of sulfanilamide. It has been suggested that sodium bicarbonate may prove useful in combating the acidosis produced by the drug. Jaundice and urticaria have also been reported as undesirable side effects following the administration of this drug. Magnesium sulfate should not be administered during the course of the treatment because it is thought to increase the danger of acidosis. Statements concerning the effectiveness of sulfanilamide in the treatment of gonorrhea have appeared in the public press. Unfortunately the latter has been able to obtain the drug for this purpose over the drug counters and sulfhemoglobinemia and cyanosis have followed this uncontrolled use in certain instances. There is also a possibility that methemoglobinemia and granulocytopenia may follow low such therapy and there have been reports of hemolytic anemia following the administration of sulfanilamide. It is advisable in the use of sulfanilamide to examine the blood microscopically for evidence of red blood cell destruction as well as lowering of the white blood cell count, and to rule out both sulfhemoglobinemia and methemoglobinemia by spectroscopic examination of the blood. Until more is known it should not be prescribed concurrently with other drugs (except in case of sodium bicarbonate as indicated above).

POLLEN ALLERGEN SOLUTIONS QUIBB (See New and Nonofficial Remedies, 1937, p 36)

The following preparations are also marketed in 5 cc. ampuls representing 25,000 protein nitrogen units per cubic centimeter:

Grasses Combined Pollen Allergen Solution Squibb (See also p 36)
June Grass Orchard Grass Red Top and Timothy in equal parts
Seed Combined Pollen Allergen Solution Squibb (Grass Extracts and Dwarf Ragweed in equal parts)

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED

FRANKLIN C BING Secretary

WEGNER BRAND TOMATO JUICE

Manufacturer—Wegner Canning Corporation, Sodus N Y

Description—Canned tomato juice seasoned with salt

Manufacture—Carefully inspected tomatoes are washed, scalded, again washed and trimmed of stems, cores and any defects. The cleaned tomatoes are preheated and gently pressed to separate the juice from the core, seeds and skin. Salt is added. The juice is heated and automatically packed in cans which are sealed, processed and cooled.

Analysis (submitted by manufacturer)—Moisture 92.6% total solids 7.4%, ash 1.2%, fat (ether extract) 0.04%, protein (N \times 6.25) 0.9%, total reducing sugars as invert sugar before inversion 3.8%, total reducing sugars as invert sugar after inversion 3.8%, crude fiber 0.2%, carbohydrates other than crude fiber (by difference) 5.1%.

Calories—0.24 per gram, 7 per ounce

Vitamins—Chemical titration of cevitamic (ascorbic) acid in the canned tomato juice shows 0.21 mg per cubic centimeter, or 129 International units of vitamin C per fluidounce.

CHOC-LADE CHOCOLATE FLAVORED DRINK

Bottler and Distributor—Bowman Dairy Company, Chicago

Description—Pasteurized chocolate flavored sweetened defatted milk (defatted milk with added cocoa, starch-free powdered cane sugar, with vegetable emulsifying agent, salt and vanilla flavoring).

Manufacture—Choc-Lade Dairy Drink Powder (THE JOURNAL, July 24, 1937, p. 277) is mixed with an equal amount of sugar and part of the milk, and agitated until smooth. Remaining milk and sugar are added to mixture, heated in vats 63-66 C for thirty minutes with constant agitation, cooled, bottled and kept refrigerated until delivery.

Analysis (submitted by manufacturer)—Moisture 82.5%, ash 0.7%, fat (ether extract) 2%, protein (N \times 6.25) 2.3%, reducing sugars as invert sugar 2.6%, reducing sugars as lactose 5.1%, sucrose (copper reduction method) 2.9%, crude fiber 0.1%, carbohydrates other than crude fiber (by difference) 12.4%, caffeine and theobromine 0.01%.

Calories—0.76 per gram, 22 per ounce

Vitamins—The vitamin content of Choc-Lade is that of the milk used.

- (1) MACMARR BRAND EVAPORATED MILK
- (2) MAX-I-MUM BRAND EVAPORATED MILK
- (3) SUNNY SKIES BRAND EVAPORATED MILK

Distributors—(1) Lucerne Cream and Butter Company, Oakland, Calif., (2) Safeway Stores of California, (3) General Food Products Company, Vernon, Calif.

Packers (1) and (3)—Lucerne Cream and Butter Company, Oakland, Calif. (2) Lucerne Cream and Butter Company, Oakland, Calif. Carnation Company, Milwaukee, Nestle's Milk Products, Inc., New York, Pet Milk Company, St. Louis.

Description—Unsweetened sterilized evaporated milk.

Manufacture—Milk from company and government inspected farms is tested, preheated, evaporated under vacuum, homogenized, cooled, standardized to meet government requirements for butter-fat and total solids, filled into cans, sealed and sterilized.

Analysis (submitted by manufacturer)—Moisture 74.0%, total solids 26.0%, ash 1.5%, fat (ether extract) 7.9%, protein (N \times 6.38) 7.1%, lactose (by difference) 9.5%.

Calories—1.4 per gram, 40 per ounce

QUAKER MAID BRAND TABLE SYRUP

Manufacturer—Atlantic Syrup Refining Company, Philadelphia

Description—Mixture of definite proportions of corn syrup and refiners' cane syrup.

Manufacture—Eighty per cent corn syrup unmixed and 20 per cent refiners' cane syrup are mixed and filled into cans at 82 C.

Analysis (submitted by manufacturer)—Moisture 24.0%, total solids 76.0%, ash 0.6%, fat (ether extract) none, protein (N \times 6.25) 0.1%, reducing sugars as invert sugars 34.9%, reducing sugars as invert sugars after invertase inversion 46.2%, sucrose (estimated) 10.7%, dextrins (by difference) 29.7%, sulfur dioxide 0.001%.

Calories—3.0 per gram, 85 per ounce

WHITE HOUSE BRAND SWEETENED CONDENSED MILK

Distributor—The Great Atlantic & Pacific Tea Company, New York

Manufacturer—The Quaker Maid Company, Inc., New York

Description—Sweetened condensed milk prepared from milk and sucrose.

Manufacture—Fresh milk tested in the company's plant is cooled, drawn into a hotwell and sucrose is added. The mixture is concentrated under vacuum, cooled and sealed in cans.

Analysis (submitted by manufacturer)—Moisture 28.5%, total solids 71.5%, ash 1.5%, fat (ether extract) 8.35%, protein (N \times 6.38) 8.6%, sucrose 42.9%, lactose 11.8%, carbohydrates (by difference) 53.0%.

Calories—3.2 per gram, 91 per ounce

CREAM ROLLER EXTRACT FLOUR, PHOSPHATE ADDED

HENRY CLAY ROLLER EXTRACT FLOUR, PHOSPHATE ADDED

J E M BEST PATENT FLOUR PHOSPHATE ADDED

Manufacturer—Lexington Roller Mills Company, Lexington, Ky.

Description—Soft red winter wheat "short patent" flours with 0.5 per cent added calcium acid phosphate, bleached.

Manufacture—Selected soft red winter wheat is cleaned, washed, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. Chosen flour streams are blended and bleached with nitrogen trichloride (one ninth ounce per 196 pounds) and with a mixture of benzoyl peroxide and calcium phosphate (one-fourth ounce per 196 pounds), 0.5 per cent calcium acid phosphate is added. The products are 40 per cent patent flours.

Analysis (submitted by manufacturer)—Moisture 12.0%, ash 0.8%, fat (ether extract) 1.2%, protein (N \times 5.7) 8.3%, crude fiber 0.2%, carbohydrates other than crude fiber (by difference) 77.5%.

Calories—3.54 per gram, 101 per ounce

SUNLIGHT BRAND OLEOMARGARINE

Manufacturer—The Cudahy Packing Company, Chicago

Description—Margarine prepared from hydrogenated cottonseed oil, pasteurized cultured skimmed milk and salt, and containing 0.1 per cent of sodium benzoate.

Manufacture—Pasteurized cultured skimmed milk to which has been added salt and sodium benzoate, is added to hydrogenated cottonseed oil, and the mixture is whipped. The resulting emulsion is solidified by chilling, then kneaded, refrigerated, molded into prints and automatically wrapped and packed in cartons.

Analysis (submitted by manufacturer)—Moisture 14.0%, total solids 86.0%, ash 2.7%, sodium chloride 2.6%, fat (ether extract) 81.5%, protein (N \times 6.25) 0.8%, carbohydrates (by difference) 1.0%.

Calories—7.4 per gram, 210 per ounce

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SATURDAY, OCTOBER 30, 1937

DEATHS FOLLOWING ELIXIR OF SULF- ANILAMIDE-MASSENGILL—II

Nine deaths following the administration of Elixir of Sulfanilamide-Massengill were reported as THE JOURNAL went to press last week. By October 25 the number had risen to forty-six, with additional cases not yet fully confirmed. The investigative work under the auspices of the A M A Chemical Laboratory will appear in THE JOURNAL next week. It appears that the use in this "elixir" of diethylene glycol—an unstandardized, nonofficial product, not recommended or recognized for internal use—was responsible for the deaths. Diethylene glycol has its proper place in industry, it is safely used in many processes, it is not to be taken in any considerable dosage internally. There is no evidence that its ordinary use in industry or as an ingredient in the manufacture of cigarets is harmful. The drug sulfanilamide (para-amino benzene sulfonamide) does not seem to be involved so far as the deaths are concerned.

THE JOURNAL is endeavoring to obtain a complete list of the number of cases and of deaths. It asks any physician who has not reported to telegraph to THE JOURNAL (collect), giving the names and location of the patients. This will avoid possible duplication and permit an adequate report of the most unfortunate incident in the pharmaceutical industry within the last decade.

Certainly it should be unnecessary to warn again about the hazard of prescribing unstandardized and uncontrolled remedies. While it seems unbelievable that any manufacturer would circulate and promote the use of preparations for internal use without adequate preliminary tests of toxicity on animals and man, this incident shows that it can be done. The Food and Drugs Administration of the U S Department of Agriculture has rendered conspicuous service in the present circumstance, even though our present laws are so woefully inefficient as to hamper its authority. It has traced practically every shipment and given warning of the potential hazard. The catastrophe that has occurred may well stimulate congress to the development of comprehensive and effective legislation.

INJECTION TREATMENT OF HERNIA

The recent wave of enthusiasm over the inject method of hernia had its impetus in the successes of sclerotherapy in varicose veins and hemorrhoids. Some disappointment with the results of surgical procedure, particularly in cases of direct inguinal hernia, was an additional reason for the revival of a method long relinquished and tainted by quackery.

According to recent reports by Bratrud, Rice Harris and White, and Fowler the rationale of the treatment depends on the property of mildly irritant solutions to produce a fibrosis when injected into normal tissues, and on the ability of the fibrosis thus produced to obliterate the inguinal canal by causing an intimate adherence of the muscular layers in this region by much the same mechanism as that obtained by suturing. Harris and White¹ injected such irritants into the muscles of the thigh in a group of normal guinea-pigs. They found that these solutions provoked a polymorphonuclear leukocytic response of short duration, followed by a gradually increasing reaction from the mononuclear mesenchymal elements, which later differentiated into spindle cell fibroblasts, resulting in fibrosis. MacMillan and Cunningham, Fowler, Rice and others have obtained similar results. Rice² has obtained microscopic proof of the occurrence of fibrosis in human beings in biopsies from patients who have been operated on for the cure of hernia after having submitted to one or two injections at varying intervals before the operation was performed.

The injection method, according to its modern advocates, is applicable only to hernias that can be completely reduced and kept reduced by means of a truss. Its use is contraindicated in irreducible hernias, in sliding hernias and in the presence of an undescended testis. Injections are further contraindicated in the presence of superficial skin infections or erosions caused by the truss, in syphilis, diabetes, senility or marked emaciation. Hernias with a wide ring are not likely to give a good result. A condition sine qua non is a properly applied truss capable of keeping abdominal contents out of the sac at all times. This is frequently impossible in obese patients and in nervous and restless children. The case best suited for the treatment is the small, reducible, indirect inguinal hernia in a young person. The complicated hernias and the large hernias of the middle aged and the elderly are the least suited for the injection treatment. Anatomic conditions in a direct hernia, in the umbilical and the femoral hernia, make the injection treatment undesirable, in the opinion of many.³

The treatment as outlined by Harris and White consists of (1) from eight to twelve preliminary injections in a period of one month, (2) four reinforcing injections once a week to consume another

1 Harris F I and White A S. Injection Treatment of Hernia: Its Experimental Basis. California & West Med 15: 142 (Nov) 1937.
2 Rice C O in discussion of Bratrud A F. M. 1937.
3 Mason J C in discussion of Bratrud A F.

month, (3) immediate follow-up examinations once a month for six months (if necessary, occasional reinforcing injections may be made) and (4) final follow-up examinations every two months for one year. The entire treatment requires twenty months for each case. The following are possible complications: an unusually severe local reaction, strangulation, perforation of the bowel, fecal fistula, peritonitis, abscess, atrophy of the testicle, sexual impotence. The needle may enter a vein or artery. The fluid may be placed too deeply or too superficially. If placed too deeply, it may enter the cord or peritoneal cavity. Injection of the cord results in edema of the penis, scrotum and epididymis. Such swellings are not uncommon with this method. A certain amount of pain and transient swelling occur, according to Harris and White, with almost every case. The injection of the fluid into the peritoneal cavity produces an attack characterized by an initial chill and severe abdominal cramps, pain of extraordinary severity in both testes and in the penis, leading to shock. Harris and White state that the fitting and care of trusses require a number of days and careful examination. The treatments themselves are exacting and require skill. The numerous possibilities for dangers and complications make continuous vigilance necessary. "Even in the hands of competent men, this method may be found unsatisfactory for these reasons."⁴ Harris and White report a recurrence of 4.1 per cent in a follow-up study of 121 completed "good surgical risk" cases of inguinal hernia. In forty-one cases of inguinal hernia considered a poor surgical risk, their recurrence rate amounted to 19.5 per cent. MacKinney, in a follow-up study of 300 cases, found 83 per cent cured after six months to three and one-half years. Rice reported 97.6 per cent cured out of 379 patients after not less than six months. Bratrud, at the University of Minnesota Hospital Clinic, had only nine cases out of a total of 707 in which "final closure could not be obtained" but states "I shall be very well pleased if we can keep our recurrences below 10 per cent."

The statement that the treatment has no fatalities is misleading and unwarranted. Bratrud⁵ mentions a case in which 16 minims (1 cc) of phenol-thuja solution had been injected into the peritoneal cavity, causing perforation of the ilium and death. Collins⁶ observed two fatal cases of pulmonary embolism, a secondary gangrene of the sigmoid and upper rectum, and two complete bowel obstructions resulting from accidental escape of some of the fluid into the peritoneal cavity. Ziemann and Larkowski⁷ report a case of necrosis of the cord following a single injection of thuja solution.

⁴ Harris F. I. and White A. S. Injection Treatment of Hernia. A Critical Analysis of the Failures, Recurrences and Complications. *Am J Surg* 27: 263, 1937.

⁵ Bratrud A. F. Ambulant Treatment of Hernia. *Am J Surg* 37: 324, 1937.

⁶ Collins D. C. in discussion of Harris and White.⁴

⁷ Ziemann S. A. and Larkowski T. M. Necrosis of Cord Structures Following the Injection Treatment of Reducible Hernia. *J A M A* 107: 1558 (Nov. 7) 1936.

In striking contrast to the favorable reports of Bratrud, Rice, Harris and White are those of Burdick and Coley⁸ reporting from the Hospital for Ruptured and Crippled, in New York. These authors treated ninety-two hernias in sixty-six patients by the injection method. Of fifty-six cases followed up, a definite relapse was noted in forty-seven, or 81.03 per cent. At present, eleven patients are apparently cured and nine of these are still wearing trusses. In the face of such disappointing results, they have abandoned the treatment.

Rice states that the end results from this method cannot be accurately adjudged at this time because the results do not extend over a period of more than two years. Bratrud expects not less than 10 per cent of recurrences from the more complicated cases. Fowler states "A frank and truthful answer is that as yet we have but little exact and dependable information as to the recurrence rate of the injection treatment."

Although in the hands of some investigators the results seem to have been good, the complications, the difficulty in selecting suitable cases, and the still uncertain percentage of recurrences would seem to make the method unsuitable except under circumstances in which unusually careful technique and suitable care are possible. Careful follow-up studies for a sufficiently long period will undoubtedly furnish data on which to evaluate it.

PERITONEAL PROTECTION

Protection of the peritoneum against infection has been attempted by many investigators since Issayeff¹ in 1894 found that intraperitoneal injections of sterile irritants, such as blood serum, broth and sodium chloride solution, increased peritoneal resistance to bacteria. However, such substances and the usual bacterial vaccines were at best only moderately effective in protecting patients from peritonitis; these materials at the same time produced local and systemic reactions that were always unpleasant and often severe. Issayeff's method nevertheless constituted a valuable lead toward future experimentation. More than thirty years later, the peritoneal "struggle mechanism" was clarified by Steinberg and his associates.² They demonstrated that satisfactory peritoneal protection is determined by three factors: 1. A sufficiently large number of phagocytic cells (polymorphonuclears) must be mobilized to phagocytose invading bacteria and to prevent bacterial multiplication and elaboration of soluble toxic substances. 2. Such a mobilization requires retention of the

⁸ Burdick C. G. and Coley B. L. Injection Method of Treating Hernia. *Ann Surg* 106: 322 (Sept.) 1937.

¹ Issayeff. *Ztschr f Hyg u Infektionskr* 16: 287, 1894.

² Steinberg Bernhard and Snyder D. A. Immune Cellular Reactions in Experimental Acute Peritonitis. *Arch Path* 8: 419 (Sept.) 1929. Steinberg Bernhard. The Cause of Death in Acute Diffuse Peritonitis. *Arch Surg* 23: 145 (July) 1931. The Experimental Background and the Clinical Application of the Esch, Cole and Gum Tragacanth Mixture in Prevention of Peritonitis. *Am J Clin Path* 6: 253 (May) 1936. Steinberg Bernhard and Kolbacker J. L. The Cardiacular System in Infected and Unprotected Animals with Acute Diffuse Peritonitis. *J Lab & Clin Med* 20: 1150 (Aug.) 1935.

leukocyte evoking antigen within the peritoneal cavity, most antigens, including ordinary suspensions of bacteria, leave the peritoneum too rapidly to be effective.³ The antigen must be of such character as to bring to the peritoneum the necessary quantity of phagocytic cells with sufficient rapidity.

In an extensive series of experiments, Steinberg and Goldblatt⁴ demonstrated conclusively that a solution of gum tragacanth holding in suspension a prepared strain of *Escherichia coli* treated by long exposure to a weak solution of formaldehyde fulfilled these three requirements. Subsequent clinical experiences of Potter and Coller,⁵ Coller and Ransom⁶ and other surgeons have confirmed these studies. The protecting material developed by Steinberg prevented peritonitis even when gross fecal soiling of the peritoneum occurred, at the same time reactions were reduced to a minimum. Since mobilization of the phagocytes is achieved in three hours (and bacterial multiplication inducing peritonitis requires from eighteen to twenty-four hours) the protective material may be introduced at the time of operation even in the presence of gross contamination.

The investigations of Steinberg and his collaborators would seem to be of inestimable value in eliminating a major hazard of abdominal surgery. Nevertheless, the search for such a technic has been so long and the disappointments have been so many that many more studies should be made promptly to establish the real and practical worth of the method.

Current Comment

EXPERIMENTAL ANEMIA

Recently Rhodes and Miller¹ reported a study of the effects of a combination of aminopyrine and nutritional deficiency on the blood of dogs. They found that dogs fed on normal diets could be given 0.5 Gm of aminopyrine by stomach tube daily without demonstrable change in the blood picture. They further found that dogs on the Goldberg pellagra-producing (black tongue) diet also usually failed to develop any appreciable anemia. A combination, however, of this diet and 0.5 Gm of aminopyrine daily led to a pronounced and at times fatal anemia in from eight to thirty-five days. Daily administration of 10 Gm of yeast autolysate would prevent or cure this anemia. These observations

led Rhodes² to study the action on the blood of dogs of other toxic products of endogenous origin. When indole was used for this purpose, Rhodes found that normally fed dogs could be given a capsule containing 1 Gm of crystalline indole daily without appreciable effect on the blood picture. If dogs previously fed on the Goldberg diet for some five to twelve weeks were given 1 Gm of indole daily, they invariably showed a precipitous fall in hemoglobin content and in the numbers of red blood cells. The red cells usually fell to less than a million per cubic millimeter by the fourth or fifth week. Similar anemias occurred in dogs fed exclusively on milk. Even when the dogs were maintained on the blacktongue diet, administration of liver extract prevented or cured the indole anemia. Similar recoveries were noted when the animals were returned to a normal diet. These observations may reopen the whole question of gastro-intestinal auto-intoxication.

MEASURING IMMUNITY IN WHOOPING COUGH

The optimistic reports about thirty years ago on the use of the "opsonic index" as a method of clinical diagnosis were soon followed by almost complete abandonment. Interest in cytophagic immunity has been recently revived, however, by attempts to simplify the technic. One of these variations—that described by Huddleson—has been applied by Kendrick and her co-workers¹ in a study of immunity in pertussis and of the efficiency of antipertussis vaccines. Cells containing no micro-organisms are given a rating of 0, those with from one to five micro-organisms a rating of 1. Cells containing from six to twenty bacteria are recorded as rating 3, from twenty-one to forty micro-organisms an average of 8, and so on. From these recorded ratings the average rating per leukocyte is readily calculated. Applying this method to a child given a series of four nonviable *Bacillus pertussis* injections, the Michigan serologists found that the opsonocytaphagic titer rose from 0 to a maximum of 3, which was reached one week after the fourth dose of vaccine. The titer remained at this high level for about eight weeks and then gradually fell to 2 by the end of one year. The average rating of sixty-eight children given a similar series of four injections of vaccine rose from an initial rating of 0.3 to a maximum of 2.7 a week after the fourth immunizing dose, fell to 1.9 by the end of one year, and remained at this level till the end of the second year. In a second series of forty-nine children given smaller doses of pertussis vaccine the initial rating (0.1) was increased to 2.3 after the fourth injection, falling to 1.6 by the end of one year and to 0.7 by the end of the second year. The variations in the opsonocytaphagic rating in 119 nonvaccinated subjects during an attack of pertussis is of particular interest. During the first two weeks after the onset of symptoms the average rating was 0.8, which increased to a maximum of 2.3 by the eighth week of the disease. The titer then gradually fell to a fairly stationary level of

³ Acute Peritonitis editorial J. A. M. A. 95: 1917 (Dec. 20) 1930.

⁴ Steinberg, Bernhard and Goldblatt, Harry. Studies on Peritonitis. I. Production of Experimental Peritonitis and Survival Following Intra-peritoneal Injection of *Bacillus Coli*. Arch. Int. Med. 39: 446 (March) 1927. II. Passage of Bacteria from the Peritoneal Cavity into Lymph and Blood. *ibid.*, p. 449. Protection of the Peritoneum Against Infection. Surg. Gynec. & Obst. 57: 15 (July) 1933.

⁵ Potter, E. B. and Coller, F. A. Intraperitoneal Vaccination in Surgery of the Colon. Ann. Surg. 101: 886 (March) 1935.

⁶ Coller, F. A. and Ransom, H. K. The One Stage Procedure in the Treatment of Carcinoma of the Rectum. Ann. Surg. 104: 636 (Oct.) 1936.

¹ Rhodes, C. P. and Miller, D. K. Effect of Diet on Susceptibility of Canine Hematopoietic System to Damage by Aminopyrine. Proc. Soc. Exper. Biol. & Med. 36: 654 (June) 1937.

² Rhodes, C. P. Effect of Indole on Hematopoiesis in Dogs Fed Deficient Diets. Proc. Soc. Exper. Biol. & Med. 36: 652 (June) 1937.

¹ Kendrick, Pearl, Gibbs, Jean and Sprick, Marian. J. Infect. Dis. 60: 202 (May-June) 1937.

09, which was maintained till the end of the second year. In a parallel study of 154 nonvaccinated subjects with no history of pertussis, a suggestive parallelism was noted between age group and opsonocytaphagic titer. With age groups under 9 years the average rating varied from 0.2 to 0.3. With twenty-two persons over 20 years of age the average cytophagic titer was 1.2. In skilled hands the new technic may prove to be of considerable diagnostic aid.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Changes in Health Officers—Dr. William H. Goff, formerly of Glasgow, Ky., has been placed in charge of the Coosa County Health Department, with headquarters in Rockford. Dr. Benjamin S. Black, Grove Hill, has been appointed health officer of the newly created Clarke County Health Unit. Dr. Douglas H. Fryer, Toronto, Ont., was recently chosen health officer of Greene County.

Society News—The Northwestern Division of the Medical Association of the State of Alabama was addressed at Russellville, September 16, by Drs. Hubert K. Turley, Memphis, Tenn., on "Pyelitis of Pregnancy", Dan C. Donald, Birmingham, "Diagnosis and Management of Colon Lesions", Ralph M. Clements, Tuscaloosa, "Psychological Aspects of Ear, Nose and Throat Disease", Albert C. Jackson, Jasper, "Management of Fractures of the Shaft and Proximal End of the Humerus", and Seale Harris Jr., Birmingham, "Treatment of Central Nervous System Syphilis".

CALIFORNIA

Personal—Dr. Emmett E. Sappington has been temporarily appointed assistant director of public health of San Francisco pending examination by the civil service commission.

Society News—A joint meeting of the Los Angeles Society of Neurology and Psychiatry and the internal medicine section of the Los Angeles County Medical Association will be addressed November 3, among others, by Dr. Charles F. McCuskey, on "Alcohol Injection for the Relief of Anginal Pain". Dr. Archie M. Roberts, among others, discussed "Repeated Coronary Thrombosis with Peripheral Embolism and Embolectomy" before the Los Angeles Heart Association, October 19. A symposium on legal medicine was presented before the San Francisco County Medical Society, October 12, by Dr. Joseph Catton, San Francisco, Dr. Frederick Proescher, San Jose, Dr. Adelbert M. Moody, Harley F. Peart and Dr. Jesse L. Carr, San Francisco. Lieut. Albert R. Behnke Jr., M.C., U.S. Navy, addressed the Hollywood Academy of Medicine, October 21, on "Submarine Medicine".

FLORIDA

Annual Meeting of East Coast Society—The tenth annual meeting of the Florida East Coast Medical Society will be held at Hollywood, November 12-13. The following program has been announced:

- Dr. Milton Paul Travers, Miami: Fractures of the Spine
- Dr. Edward Sterling Nichol, Miami: Clinical Significance of Asthma in Heart Disease
- Drs. Eugene Clay Shaw and Jack A. McKenzie, Miami: Vaginal Approach to Stone in the Lower Ureter
- Dr. Charles B. Mabry, Jacksonville: Some Observations on Hip Fractures
- Drs. Kenneth Phillips and Ammon Buist Litterer, Miami: Diagnostic Value of the Neutralizing Function of the Stomach
- Dr. Theodore F. Hahn Jr., DeLand: Gonococcal Peritonitis of the Right Upper Quadrant
- Dr. Elijah T. Sellers, Jacksonville: Some Observations of Treatment with Sulfanilamide
- Dr. Louie M. Lumbaug, Jacksonville: Protamine Insulin in the Treatment of Diabetes Mellitus
- Dr. A. Daniel Amerise, Coral Gables: Treatment of Poisonous Snake Bites
- Dr. Duncan T. McEwan, Orlando: Stricture of the Rectum in Lymphopathia Venerum

GEORGIA

Society News—The Fulton County Medical Society was addressed October 21 by Dr. Arthur Park McGinty, Atlanta, among others, on "The Comparative Effects of Pregnancy and Phrenic Nerve Interruption on the Diaphragm with Their Relation to Pulmonary Tuberculosis". Justin M. Andrews, Sc.D., Baltimore, discussed "Malaria Control in the South" before the Southwest Georgia Public Health Association in Valdosta, September 2.

Changes in the Faculty at Georgia—The University of Georgia School of Medicine announces the appointment, October 1, of the following clinical teachers with the title of associate professor and in charge of the departments indicated:

- Dr. Richard Frank Slaughter Jr., formerly of Norfolk, Va.: neurosurgery
- Dr. Hervey M. Cleckley, Augusta: psychiatry
- Dr. Lucius N. Todd, Waverly Hills, Ky.: tuberculosis
- Dr. Perry P. Volpitta, New York: anesthesia

IDAHO

State Medical Election—Dr. Frank C. Gibson, Potlatch, was chosen president-elect of the Idaho State Medical Association at its recent annual meeting in Boise, and Dr. Arthur C. Jones, Boise, was installed as president. Dr. Harold W. Stone, Boise, was reelected secretary. It was decided to hold the next annual meeting of the association at Sun Valley.

Society News—The Pocatello Medical Society was addressed in Pocatello, October 7, by Dr. Abram M. Newton, Pocatello, on "Fractures of the Femur". A proposal to combine the society with the Idaho Falls Medical Society for the purpose of holding two major meetings each year, the programs to be given by notable speakers, was discussed at the recent meeting.

ILLINOIS

Acting State Health Officer—Dr. Frank J. Jirka, since 1933 health officer of Illinois, has resigned to reenter private practice in Chicago. Dr. Albert C. Baxter, assistant director of the department since Feb. 1, 1930, has been appointed acting director. Dr. Jirka's resignation was to be effective September 1, according to a recent announcement, but he continued in office during the outbreak of infantile paralysis. Dr. Baxter graduated from the University of Michigan Medical School, Ann Arbor, in 1907.

Chicago

New Tumor Institute—Coutard and Cheatele Come to Chicago—Organization of the Chicago Tumor Institute, chartered in Illinois, not for profit, to conduct research on the causes, diagnosis and treatment of cancer and to instruct and assist physicians, surgeons, clinics and hospitals in the diagnosis and treatment of cancer, has been announced. The trustees include Dr. Ludvig Hektoen, Arthur H. Compton, Ph.D., Dr. Max Cutler, Mr. Modie J. Spiegel Sr., Mrs. Margaret Pirie Beacom, Mrs. Francis Neilson, Mrs. Arthur Meeker, Mr. Alfred Busiel and Mr. Roy C. Osgood, all of Chicago.

Dr. Hektoen, director of the John McCormick Institute for Infectious Diseases, and recently appointed member of the council of the National Cancer Institute, has been elected president of the board of the Chicago Tumor Institute. Dr. Compton, professor of physics at the University of Chicago, has been elected vice president, Roy C. Osgood vice president of the First National Bank of Chicago, treasurer and Mr. Louis P. Haller, secretary. Mr. Maurice Berkson has acted as counsel in the organization of the institute. The institute will be directed by a scientific committee consisting of Dr. Cutler, Dr. Henri Coutard of the Curie Institute, Paris, France, Sir George Lenthal Cheatele, London, England, Dr. Compton, and Dr. Hektoen.

Plans have been completed for the remodeling of the building at the southeast corner of Dearborn and Elm streets, which will house the activities of the institute. The building is to be ready for occupancy and the institute will begin to function about March 1, 1938. The institute will be equipped with research laboratories, and modern x-ray and radium equipment. Dr. Coutard, now in Paris, will return to Chicago about November 10. At the request of the California Institute of Technology, the Chicago Tumor Institute has granted Dr. Coutard leave of absence for three months in order to carry on research with the 1,000,000 volt x-ray machine in the laboratory of Prof. Robert A. Millikan at Pasadena, but he will return to Chicago at the time of the opening of the new institute about March 1 next. Sir Lenthal is now in Chicago and will spend most of his time in laboratory research and in graduate instruction. Dr. Cutler resigned as director of the tumor clinic at Michael

Reese Hospital, September 15, to direct the institute. One of the important functions of the institute is to train physicians and surgeons desiring to specialize in the diagnosis and treatment of cancer. Two members of the staff of the Peiping Union Medical College, supported by the China Medical Board of the Rockefeller Foundation, have already arrived in this country to take their training at the Chicago Tumor Institute. Although the scope of the activities of the institute will be national, the contributions to its funds have been made entirely by citizens of Chicago.

New X-Ray Department at St Luke's Hospital—The formal opening of the new x-ray department at St Luke's Hospital took place October 23. In the evening, with Dr Edward L. Jenkinson, director, department of radiology at the hospital, as chairman, the following program was presented:

Charles H. Schweppe, president board of trustees address of welcome.
Dr Selim W. McArthur, president medical staff, "The Development of the X-Ray Department and Its Future."

Dr Arthur R. Elliot, senior member of the medical staff, "The Medical Uses of the X-Rays."

Dr Byrl R. Kirklin, Rochester, Minn., "The X-Rays in Medicine and Some Indications for Their Employment in the Diagnosis of Gastro-Intestinal Diseases."

Dr Arthur U. Desjardins, Rochester, Minn., "Radiotherapy for Inflammatory Conditions."

The new department occupies the entire second floor of the main building of the hospital and three rooms on the nineteenth floor with a reserve film storage room on the roof representing altogether an investment of about \$140,000. Sixteen rooms are assigned for the making of roentgenograms or the treatment of patients, twelve others are used for allied purposes, such as a waiting room for patients or their visitors, a consultation room, linen closet and offices. A feature of the department is a bronchoscopy room, equipped with a biplane fluoroscope, said to be the only one of its kind west of Philadelphia. It has a built-in operating table. Two rooms are devoted to supervoltage therapy for deep-seated cancer. Ordinarily voltages of from 400,000 to 500,000 will be used, but 850,000 volts constant potential can be developed when necessary. One therapy room is equipped with a shock-proof couch so that the patient may be treated from above or below with voltages as high as 200,000. The x-ray photographic rooms have machines for all kinds of specialized work. There is a machine for serial films of the stomach taking twelve exposures on one film to show the movements of the stomach or intestine. There is also a museum where films and reductions are stored and indexed for teaching purposes.

IOWA

Society News—Dr William E. Chamberlain, Philadelphia, will discuss "Low Back Pains" before the Linn County Medical Society, Cedar Rapids, November 4, among other speakers. The society was addressed, October 8, by Drs John M. Wheeler, New York, on "Effective Plastic Operations for Deformities About the Eyes"; Meyer Wiener, St. Louis, "Things Which the General Practitioner Should Know About Ophthalmology," and Joseph Norman Bickert, Cedar Rapids, "Use of Electrocoagulation in the Treatment of Cervicitis and Endocervicitis."—At a meeting of the Johnson County Medical Society in Iowa City, October 6, Dr Azel Ames Jr., Iowa City, discussed "Suction Treatment in Empyema."—The Lee County Medical Society was addressed in Fort Madison, September 23, by Drs Horace M. Korns, on "Diagnosis and Treatment of Peripheral Vascular Disease"; Ruben Nomland, "Diagnosis and Treatment of Common Skin Diseases," and Julian D. Boyd, "After-Care in Children's Diseases," all are of Iowa City.—The medical and dental societies of Marion County held a joint meeting at Pleasantville, September 23, speakers included Dr Donald B. Williams, Knoxville, on poliomyelitis.—Dr William C. Buchbinder, Chicago, discussed "The Treatment of Peritonitis" before the Austin Flint-Tri-District Medical Society in Charles City, September 9.—Dr Samuel M. Femberg, Chicago, addressed the Woodbury County Medical Society at Sioux City, October 13, on "Problems in the Management of the Asthmatic."

MAINE

Society News—Dr Thomas A. Foster, Portland, discussed "The Care and Treatment of the New-Born" before the Franklin County Medical Society, September 13.—At a meeting of the Kennebec County Medical Association, September 8, Dr Albert Warren Stearns, Boston, discussed "Revolutionary Medicine—A Note on the Beginning of Organized Medicine in New England."—A recent meeting of the Somerset County Medical Society in Lakewood was addressed, among others, by Dr Charles W. Steele, Auburn, on "Treatment of Cardiac

Incompetence and Hypertension."—The Washington County Medical Society was addressed at St. Stephen, N. B., recently by Drs Charles H. Best, Toronto, on "Thrombosis Formations," and Frank Scott, Toronto, "Malignancy of the Esophagus."

MARYLAND

The Dohme Lectures—Einar Lundsgaard, professor of physiology, Institute of Medical Physiology, University of Copenhagen, Denmark, will deliver the Dohme Lectures at the Johns Hopkins University School of Medicine, Baltimore, November 10-12. The titles of the lectures are:

The Chemistry of the Anaerobic Muscular Contraction
The Metabolism of the Aerobic Working Muscles
The Metabolism of the Isolated Liver

MASSACHUSETTS

Hospital News—Dr Andrew C. Ivy, Nathan Smith Dr. professor of physiology and professor of pharmacology, Northwestern University Medical School, Chicago, gave a lecture at the Massachusetts General Hospital, October 8, on "Oral Enzyme Therapy and Bile Formation."

The Dunham Lectures—Dr Corneille Heymans, professor of pharmacology, University of Ghent, Belgium, will deliver three lectures at Harvard University Medical School, Boston, under the Edward K. Dunham Lectureship for the Promotion of the Medical Sciences. His subjects will be:

November 8, "The Mechanisms of Vasomotor Tone and Blood Pressure Regulation."
November 10, "The Mechanisms of Vasomotor Tone and Blood Pressure Regulation (continued)."
November 12, "The Role of the Aortic and Carotid Sinus Pressoreceptors and Chemoreceptors in the Reflex Control of Respiration."

MINNESOTA

Society News—At a meeting of the East Central Minnesota Medical Society in Braham, September 22, Dr Thomas A. Peppard, Minneapolis, discussed "Use of Digitalis and Quinidine in Heart Diseases" and Dr Otto Yoerg, Minneapolis, "Improved Treatment of Fractures of Os Calcis."—Among others, Dr James F. Weir, Rochester, addressed the Wabasha County Medical Society, October 7, on "The Medical Treatment of Diseases of the Gallbladder."—Dr Gordon R. Kamman discussed "Bromides, Their Use and Abuse" before the Minnesota Academy of Medicine in St. Paul, October 13, and Drs Herbert Z. Giffin and Charles H. Watkins, Rochester, presented a paper entitled "The Effect of the Administration of Yellow Bone Marrow in Leukopenic States."—Dr John C. McKinley, Minneapolis, delivered the presidential address before the Minnesota Pathological Society at its annual meeting, October 19, on "The Pathologic Physiology of the Cerebellum."

Changes in the Faculty at Minnesota—New appointments to the University of Minnesota Medical School, Minneapolis, include the following:

Dr Wesley W. Spink, formerly of Harvard University Medical School, Boston, assistant professor of medicine.

Dr Burtrum C. Schiele, formerly of Cornell University Medical College, New York, assistant professor in the division of nervous and mental diseases.

Leo T. Samuels, Ph.D., formerly of the University of Southern California, School of Medicine, Los Angeles, assistant professor of physiologic chemistry.

Ancel B. Keys, Ph.D., has been transferred from the department of physiologic chemistry in the Mayo Foundation of the University of Minnesota Graduate School to an associate professorship in the department of physiology of the medical school. According to Dr Harold S. Diehl, dean of medical sciences, Dr Keys will develop a teaching and research program in physiology and school health for students majoring in physical education, which will provide an opportunity for graduate work in these fields and for research in the physiology of normal activity.

MISSISSIPPI

Gulf Coast Clinical Society—The annual meeting of the Gulf Coast Clinical Society will be held at the Buena Vista Hotel, Biloxi, November 3-4. The following program will be presented:

Dr Joseph E. Green, Laurel, president-elect, state medical association.
The Economic and Social Side of the Practice of Medicine.

Dr Edward S. Sledge, Mobile, president, Alabama State Medical Association. The Clinical Value and Limitations of Electrocardiography.

Dr Edward Jelks, Jacksonville, president, Florida Medical Association. The Diagnosis of Gastro-Intestinal Cancer.

Dr Raymond A. Vonderlehr, assistant surgeon general, U.S. Public Health Service, Washington, D.C. The Public Health Control of Syphilis.

Dr Curtice Rosser, Dallas, Texas. Venereal Diseases of the Anus.

Col Charles F Craig New Orleans Treatment of Malaria
 Dr Horton R Casparis Nashville Tenn The Mental Health Problem
 in Children
 Dr William C Chaney Memphis How Is the General Practitioner to
 Diagnose Food Idiosyncrasies?
 Dr Morris Edward Davis Chicago Use and Abuse of Cesarean Section
 Dr Lucius E Burch Nashville Tenn Sterilization of Obstetrical
 Patients in Vanderbilt University Hospital from 1925 to 1937
 Dr Charles H Heacock Memphis Radiation Treatment of Cancer of
 the Breast
 Dr Ray M Balyeat Oklahoma City Therapeutic Value of Intra-
 tracheal Use of Iodized Oil Combined with Eliminative Measures
 and Specific Desensitization in the Treatment of Intractable Asthma
 Chronic Bronchitis and Bronchiectasis
 Dr Edward W Alton Ochsner, New Orleans Peripheral Vascular
 Disease
 Dr Karl A Meyer Chicago Abdominal Injuries
 Dr J Grafton Love Rochester, Minn Intractable Low Back and
 Sciatic Pain Due to Protrusion of the Lumbar Intervertebral Disks
 Diagnosis and Surgical Treatment

Dr Morris Fishbein, Editor of THE JOURNAL Chicago, will
 address the banquet session in the evening on Social Aspects
 of Medical Care"

MISSOURI

Large Outbreak of Epidemic Encephalitis—A total of 412 cases of encephalitis with ninety eight deaths were reported to the health division of the St Louis Department of Public Welfare between June 30 and October 18. Of these cases 324 were in residents of St Louis and eighty-eight were nonresident cases, mostly in St Louis County, brought into the city for hospitalization. Of the total number of deaths eighty-six occurred in resident cases and twelve in nonresident. The case fatality rate for all cases was 23.7 per cent, including October 18. Of the total number of deaths 87.7 per cent occurred in persons over 50 years of age, most of the deaths occurred in the 50-59 and 60-69 age groups. The first case of the recent outbreak was reported to the health division on June 30. The outbreak did not really get under way until mid-August when thirteen cases were reported for the week ended August 21. From then on the incidence by weeks was as follows:

Week Ended	Number of Cases
August 28	36
September 4	52
September 11	76
September 18	76
September 25	65
October 2	54
October 9	26
October 16	8

The peak was reached September 7, when twenty-five cases were reported. After this date the incidence slowly decreased to an average of ten cases daily until October 9, when the incidence dropped sharply to an average of one case a day. According to Dr J Earl Smith, epidemiologist, occasional cases continue to be reported. The recent outbreak was similar in all respects to the 1933 outbreak save for a slightly higher incidence among the younger age group and the smaller number of cases reported. Research in the medical schools identified the causative virus of the present outbreak as being identical with the virus that caused the epidemic in 1933. According to Dr Smith, epidemic encephalitis is now apparently endemic in the St Louis area and future outbreaks are anticipated. Thus far no new epidemiologic information can be added to that of the epidemic in 1933. When the present outbreak definitely subsides, an official report will be made.

NEVADA

State Medical Election—Dr Walter H Frolich, East Ely, was named president-elect of the Nevada State Medical Association at its annual meeting in Ely September 24-25 and Dr Harry W Sawyer, Fallon, was inducted into the presidency. Dr Horace J Brown, Reno, was unanimously reelected secretary. The next annual meeting will be in Reno. The association adopted a resolution expressing 'opposition to and unwillingness to cooperate in any plan that involves federal supervision and control of medical practice in the United States'.

NEW YORK

Personal—Dr Richard Slee, White Plains, first deputy health commissioner of Westchester County since 1930 retired October 1. Dr Slee was for many years an officer of the U S Army Medical Corps and was a district health officer of the state health department before his appointment in Westchester County.

Society News—Drs Stanley P Reimann Philadelphia and Louis C Kress, Buffalo addressed the Medical Society of the County of Nassau, October 19 in Garden City L I, on cancer.—Dr Ernest L Stebbins Rochester was the speaker at the quarterly meeting of the Ontario County Medical Society.

Canandaigua, October 12, on "Source Diagnosis, Clinical Course and Treatment of Some of the More Common Streptococcus Infections"

New York City

Dr McEwen Appointed Dean at New York University—Dr Currier McEwen, secretary and assistant dean of New York University College of Medicine since 1932, has been appointed dean to succeed the late Dr John Wickoff. Dr McEwen was graduated from the college in 1926 and after a two year internship at Bellevue Hospital spent four years in research at Rockefeller Institute for Medical Research and at the Pathological Institute of the University of Leipzig. He is 35 years old. He is associate visiting physician at Bellevue Hospital, chief of the arthritis subdivision of the university's medical clinic, visiting physician of the research division of chronic diseases of the city department of hospitals, and assistant professor of medicine at the college.

Program of the Graduate Fortnight—The tenth annual Graduate Fortnight of the New York Academy of Medicine will be presented November 1-12. Clinics will be held during the days at various hospitals and evening meetings at the academy building, 2 East One Hundred and Third Street. Speakers at the evening sessions will be:

Dr Alfred N Richards Philadelphia the Wesley M Carpenter lecture
 Physiology of the Kidney
 Donald D Van Slyke Ph D New York Tests for Kidney Function
 Dr Dana W Atchley New York Edema and Its Treatment
 Dr Arthur M Fishberg New York Uremia and Pathology of Kidney
 Function
 Dr Milton C Wintermiz New Haven Conn Pathology of Vascular
 Disease
 Dr George Baehr New York Pathology of Nephritis
 Dr Robert F Loeb New York Clinical Aspects of Nephritis
 Dr Irvine H Page Indianapolis Nature of Hypertension
 Dr Herman O Mosenthal New York Clinical Aspects of Hyper-
 tension Including Malignant Hypertension
 Dr George J Heuer New York Evaluation of the Surgical Treatment
 of Hypertension
 Dr Albert A Epstein New York The Nephroses
 Dr William W Herrick New York Vascular and Renal Complications
 of Pregnancy
 Dr Karl A Menninger Topeka Kan The Emotional Factors in
 Hypertension
 Dr Dana W Braasch Rochester Minn Pathogenesis and Treatment
 of Renal Infections
 Dr Hugh Cabot Rochester Minn Renal and Perirenal Infections
 Dr John R Caulk St Louis Renal Tuberculosis
 Dr Linwood D Keyser Roanoke Va Calculus Disease the Forma-
 tion of Stones
 Dr Henry G Bugbee New York Clinical Aspects of Calculus Disease
 Dr William C Quinby Boston Mass Hydronephrosis and Pyo-
 nephrosis
 Dr John D Lytle New York Bright's Disease in Children
 Dr Meredith F Campbell New York Common Urologic Diseases in
 Children
 Dr Benjamin S Barringer New York Radiotherapy of Tumors of
 the Urinary Tract
 Dr Archie L Dean Jr New York Tumors of the Kidney and Ureter
 Dr Edwin Beer New York Tumors of the Urinary Bladder
 Dr William E Lower Cleveland Pathologic Physiology of Bladder
 Neck Obstruction
 Dr Joseph F McCarthy New York Transurethral Resection of
 Bladder Neck Obstruction
 Dr Hugh H Young Baltimore Surgical Treatment of Obstructions
 at the Neck of the Bladder

NORTH CAROLINA

Symposium on Gynecology, Obstetrics and Pediatrics—Duke University School of Medicine and Duke Hospital, Durham, announce a graduate symposium on gynecology, obstetrics and pediatrics to be given November 11-13. The program includes the following speakers, among others: Drs Horton R Casparis Nashville, Tenn, Willard R Cook, Galveston, Texas, Julius H Hess Chicago, Howard F Kane Washington D C, Foster S Kellogg, Boston, George W Kosmak New York, Esther L Richards, Baltimore, and Charles H Smith New York.

OHIO

Annual Graduate Day in Toledo—The Medical Institute of the University of Toledo will present the fourth annual Postgraduate Day Friday, November 19, with Drs Frank H Lahey and Lewis M Hurvath, Boston, as the speakers. Dr Lahey will discuss the surgical aspects of hyperthyroidism and Dr Hurvath the medical aspects.

Courses in Venereal Disease Control—Graduate courses in venereal disease control have been instituted by Western Reserve University School of Medicine Cleveland under authority of the state director of health and the U S Public Health Service. Health officers and physicians in the following states are eligible: Ohio Michigan Indiana Illinois, Wisconsin Minnesota Iowa Missouri Kansas Nebraska, North and South Dakota. Students may enter the course at any

time when a vacancy exists, usually for a duration of three or four months. Visitors may be admitted for shorter periods if they can be accommodated. The training will be informal and adapted to the needs of those taking the course, according to the announcement. Physicians who wish to take the courses should apply through their state health departments to the state director of health of Ohio. Application blanks may be obtained from Dr. Calvin C. Applewhite, regional consultant for the U. S. Public Health Service, Room 314, U. S. Court House, Chicago.

PENNSYLVANIA

State Medical Election—Dr. David W. Thomas, Lock Haven, was named president-elect of the Medical Society of the State of Pennsylvania at the annual meeting in Philadelphia, October 5-8, and Dr. Frederick J. Bishop, Scranton, was installed as president. Dr. Walter F. Donaldson, Pittsburgh, was reelected secretary. Next year's meeting will be in Scranton.

Philadelphia

Mr. H. K. Mulford Dies—Mr. Henry Kendall Mulford, director of the research and biological laboratories of the National Drug Company since 1926 and president of the Mulford Colloid Laboratory, died October 15, aged 71. Mr. Mulford graduated from the Philadelphia College of Pharmacy in 1887 and founded the H. K. Mulford Company in 1890. He retired from the presidency of that company in 1918.

Symposium on Sulfanilamide—A program of papers on "Chemotherapy in Streptococcal and Gonorrheal Infections" was presented before the Philadelphia County Medical Society October 13 by Drs. Thomas Fitz-Hugh Jr., who discussed untoward reactions of sulfanilamide therapy, Harry P. Schenck, sulfanilamide in otolaryngology, and Dickinson Sergeant Pepper, sulfanilamide management of outpatient gonorrhea. Dr. Percy S. Pelouze led the discussion of the papers.

Society News—Speakers who addressed the Philadelphia Neurological Society October 22 were Drs. Harry M. Zimmerman, New Haven, Conn., on "Newer Aspects of the Nervous Disorders in Avitaminosis", Katherine O. Shea, Elsom Haverford, Pa., "B. Avitaminosis in Clinical Medicine", and Fritz J. Lewy, "Neurologic Aspects of B. Avitaminosis". At a meeting of the Northern Medical Association October 18 the speakers were Drs. Pascal F. Lucchesi on "Prevention and Treatment of Exanthemata", John S. Lockwood, "Indications and Contraindications for Sulfanilamide", and Hobart A. Reimann, "The Pneumonias". The committee on maternal welfare of the Philadelphia County Medical Society presented the program at a meeting of the society October 27, with the following physicians as speakers: Drs. Thaddeus L. Montgomery, Newlin Fell Paxson, Alberta Peltz, Robert A. Kimbrough Jr., James Marsh Alesbury.

TEXAS

Public Health Meeting in Dallas—The fifteenth annual meeting of the Texas Public Health Association will be held at the Hotel Adolphus, Dallas, November 1-3. Among the speakers listed on the preliminary program are:

Henry F. Vaughan, Dr. P. H., Detroit, Finding the Early Case of Tuberculosis
Dr. Reginald M. Atwater, New York, Today's Trends in Public Health
Dr. Matthew R. Kinde, Marshall, Mich., subject not announced
Gov. James V. Allred, Austin, Full Steam Ahead for Health Work in Texas
Dr. Calvin R. Hannah, Dallas, How We Can Save Texas Mothers and Babies

Graduate Assembly in Houston—The eighth, ninth and tenth councilor districts of the State Medical Association of Texas will hold their sixth annual Post-Graduate Medical Assembly of South Texas November 2-4 at Houston. The following lecturers have been announced: Drs. Nathaniel G. Alcock, Dean M. Lierle and William Malamud, Iowa City; Carl E. Badgley, Ann Arbor, Mich.; Claude S. Beck and Russell L. Haden, Cleveland; Nicholson J. Eastman and Charles F. Geschickter, Baltimore; Tinsley R. Harrison, Nashville, Tenn.; Emile F. Holman, San Francisco; Albert Graeme Mitchell, Cincinnati; Quitman U. Newell and Lawrence T. Post, St. Louis; George E. Shambaugh Jr., Chicago; William D. Stroud, Philadelphia; and Georgiana M. Dvorak Theobald, Oak Park, Ill.

VERMONT

State Medical Election—Dr. Frank C. Phelps, Vergennes, was elected president of the Vermont State Medical Society at the annual meeting October 13. Dr. Leon E. Sample, St. Albans, was elected vice president and Dr. Benjamin F. Cook, Rutland, secretary. The 1938 meeting will be in Burlington.

GENERAL

Society News—Dr. George M. Coates, Philadelphia, was chosen president-elect of the American Academy of Ophthalmology and Oto-Laryngology at the annual meeting in Chicago October 11-15 and Dr. Harry S. Gradle, Chicago, was installed as president. The following were elected vice presidents: Drs. Ernest M. Seydell, Wichita, Kan.; Webb W. Weeks, New York; and John H. Foster, Houston, Texas. The 1938 convention will be held in Washington, D. C.—The American Proctologic Society will hold its next annual meeting at the St. Francis Hotel, San Francisco, June 11-14, 1938. Dr. Granville S. Hanes, Louisville, Ky., will deliver the first annual Joseph M. Matthews address. Guests sponsored by members of the society will be admitted to the sessions.—Dr. Alphonse R. Dochez, New York, was elected president of the American Clinical and Climatological Association at its annual meeting, October 12, and Dr. Francis M. Rackemann, Boston, was reelected secretary. The next annual session will be held in Atlantic City, May 24, 1938.

Pan American Cruise Congress—The *Queen of Bernice* will sail from New York January 15 for the seventh cruise congress of the Pan American Medical Association and will return January 31. There will be five days of scientific meetings in Havana and stops will also be made at Port au Prince, Haiti; Trujillo City, San Domingo; and San Juan, Puerto Rico. All the countries to be visited have extended official invitations to the association to be their guests and plans for entertainment are being made, according to an announcement. Chairmen of the sections of the association, which will hold meetings on shipboard as well as in Havana and in the other ports, have been announced as follows:

Tropical medicine: Col. Charles F. Craig, New Orleans
Thoracic section: Dr. Jay Arthur Myers, Minneapolis
General medicine: Dr. Howard R. Hartman, Rochester, Minn.
Public health: Dr. Claude W. Munger, New York
Gynecology and obstetrics: Dr. Henry Dawson Furness, New York
Orthopedic surgery: Dr. John Royal Moore, Philadelphia
General surgery: Dr. William D. Haggard, Nashville, Tenn.
Otorhinolaryngology: Dr. William E. Sauer, St. Louis
Cancer: Dr. James Ewing, New York
Radiology: Dr. Edwin C. Ernst, St. Louis
Urology: Dr. Elmer Hess, Erie, Pa.
Neurology, neurosurgery and psychiatry: Dr. Foster Kennedy, New York

Ophthalmology: Dr. Webb W. Weeks, New York
Dermatology and syphilology: Dr. Elmer B. Tauber, Cincinnati
Pediatrics: Dr. Orville E. Barbour, Peoria, Ill.
Physical medicine: Dr. William Bierman, New York
Industrial medicine and surgery: Dr. John B. Lauricella, New York
Dentistry: Alfred Walker, D.D.S., New York

Dr. Alberto Inclan, Havana, is president of the association and Dr. Joseph J. Eller, New York, is director general.

Government Services

Dr. Whitehead Retires from Bureau of Air Commerce

Dr. Roy E. Whitehead, medical director of the medical section of the bureau of air commerce, Washington, D. C., has resigned, newspapers report. He had held the position since November 1933. Dr. Eldridge S. Adams, Washington, D. C., whom Dr. Whitehead originally succeeded, has been appointed acting head of the section, it was stated.

Openings for Physicians at St. Elizabeths Hospital

Examinations for two positions as junior medical officer at St. Elizabeths Hospital, one a rotating internship and the other a psychiatric residency, are announced by the U. S. Civil Service Commission. Salaries will be \$2,000 a year. For the rotating internship applicants must be fourth year students in grade A medical schools, for the residency they must have completed four years of study in a grade A school not prior to Jan. 1, 1935, and must have the degree of M.B. or M.D. and must have completed an internship of one year except that applications will be accepted from persons now serving an accredited rotating internship. Full information about these examinations may be obtained from the secretary of the U. S. Civil Service Board of Examiners at the postoffice or customhouse in any city that has a postoffice of the first or second class or from the commission at Washington, D. C. Applications must be received not later than November 29 from states east of Colorado and December 2 from Colorado and westward.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct 2, 1937

Differential Diagnosis of Mediastinal Tumors

At the Royal Society of Medicine, Dr N L Rusby discussed the differential diagnosis of mediastinal tumors. He pointed out that the history of the patient was important in distinguishing a tumor of the mediastinum. A history of specific disease years previously may engender great caution in diagnosing tumor rather than aneurysm of the aorta. The history of intimate contact with a phthisical parent may in a seedy looking child suggest tuberculous mediastinal lymphadenitis as the cause of a dry, hacking cough, rather than Hodgkin's disease or lymphosarcoma of the thymus. Benign tumors of the mediastinum may cause no symptoms whatever. At the end of the last century, before the advent of x-rays, they were commonly found during the routine necropsy, while today they are sometimes revealed by the roentgenogram taken to exclude phthisis in a tuberculous contact. When symptoms do become manifest they are the result of either pressure of the tumor within the thorax or supervention of some complication, such as hemorrhagic infection or a bronchial fistula. The dermoid cyst is the only tumor of the mediastinum that has a pathognomonic symptom. The Chinese woman quoted by Eloesser would not have spent two years in a sanatorium in consequence of repeated hemoptysis, presumed to be due to a small tuberculous focus at the hilus, if more attention had been paid to her husband's statement that she occasionally spit up hairs.

The physical examination may or may not reveal the presence of disease. In the absence of roentgenologic support, physical signs are open to misinterpretation. Numerous instances are recorded of mediastinal cysts being mistaken for pleural effusions, encysted empyemas, bronchiectasis, phthisis and other conditions. When once infection of a cyst has occurred, the resemblance to an empyema is close. The toxic appearance with high fever and clubbing of the fingers associated with signs of fluid in the chest has often led the physician to seek surgical aid. But even rib resection and drainage do not necessarily reveal the true nature of the condition. Before metastases are evident and cachexia supervenes it is often impossible to distinguish between a benign and a malignant tumor of the mediastinum, although to do so early is important. Two points of value in forming an opinion have been pointed out by Harrington (*Surg, Gynec & Obst* 51: 647 [Nov] 1930). A benign tumor of the mediastinum may attain a large size without causing any pain. But a small malignant tumor may produce great pain. Secondly, Horner's syndrome occurs more frequently in malignant than in benign tumors.

Roentgenologic investigation is of the greatest service. A simple anteroposterior view usually is inadequate and tells little more than which side of the chest is affected. But when combined with a straight lateral view valuable information is obtained as to the shape and size of the tumor, whether its edge is clear cut or ill defined, homogeneous or nodular and—what is very important—whether the tumor lies in the anterior or the posterior compartment of the mediastinum. Oblique views often give a better idea of the structure to which the tumor is adherent. Screening may demonstrate pulsation. Roentgenologic examination combined with artificial pneumothorax may show the relation of the mass to the pleural space and whether it lies within or outside the lung substance. Contrast roentgenography with iodized oil is often useful. A complication by no means rare is secondary bronchiectasis. It is frequently difficult to decide whether certain symptoms such

as hemoptysis or thick purulent sputum, come from the cyst or the bronchiectasis to which it has given rise—a fact which is important from the standpoint of surgical treatment. It may be decided by comparison, with the sputum, of fluid withdrawn by tapping the cyst. If doubt still exists, injection of methylene blue into the cyst will disclose the presence of a bronchial fistula by tinting the sputum. Another way of solving the problem is by injection of iodized oil.

The National Health Campaign

At a reception held by the Central Council for Health Education at the London School of Hygiene and Tropical Medicine, the prime minister, Mr Neville Chamberlain, inaugurated the national campaign to encourage the wider use of health services. He described the gathering, at which many mayors and chairmen of county and district councils were present, as the largest one of responsible and influential members of local authorities that had ever been known. Great Britain was fortunate in having services and facilities for improving the health of the people which had not been surpassed by any other country in the world. But we had not succeeded in ensuring that those services were used to the full. Hence the need for this national campaign. We had antepartum clinics, infant welfare centers, tuberculosis dispensaries, facilities for the treatment of venereal diseases, school medical and dental services and our milk in schools scheme. We were adding to these services every year. Within the last few months we had made arrangements that qualified midwives on a whole-time salary basis would be available for attendance on women in their own homes.

Already encouraging results had been achieved. In the last fifty years the standardized death rate had been brought down from 187 to 92 per thousand, the infant mortality rate from 138 to 59 and the tuberculosis mortality from 2,450 to 657 per million. The expectation of life of a new-born child today was nineteen years longer than it was when Mr Chamberlain was born. But although tuberculosis was a notifiable disease, many cases were brought to the notice of the health officer in the later stages. The figures for children who attended infant welfare centers varied enormously. In some areas the whole infant population attended, in others the attendance was as low as 10 per cent. The same variation held for expectant mothers receiving antepartum care. Another striking instance of disregard for health was the scheme under which children could buy milk in the schools for half the ordinary price. School medical officers testified to the good effects of milk in improving the physique. Yet, leaving out the children who received free milk, less than half of the remainder bought it at the reduced price. The government and the Central Council for Health Education would therefore carry on for the next six months an intensive campaign of publicity and propaganda, in cooperation with the local authorities, who had responded to the project with the greatest enthusiasm.

The Progress of Cremation

Fourteen countries were represented at the International Cremation Congress, which has been held in London. In welcoming the delegates the lord mayor referred to the growth of cremation, which though one of the oldest forms of disposing of the dead dates in its modern form in this country from 1874. Lord Horder, who was elected president of the congress, said that its primary purpose was to establish a permanent international federation. The cause of cremation in many countries still suffered from legal restrictions. Cremation offered the only practical alternative to the prevailing system of burial, which was wasteful of ground, pagan in its perpetuation of the fetish of the physical body, criminal in its slipshod methods of registration, whereby it was possible for a death certificate to be given without the physician having seen the body, offensive in subjecting the body to the revolting process of

putrefaction, and menacing to public health in the danger of infection which clung to the soil. In this country, where every acre was precious, burial had become a luxury which we could not afford. To those who urged that cremation would give an impetus to crime he would point out that since the opening of the Woking crematorium upward of 100,000 persons had been cremated in this country, and in not one case had any suspicion of crime arisen.

PARIS

(From Our Regular Correspondent)

Oct 2, 1937

A Symposium on Pulmonary and Abdominal Infarcts

At the July 5-7 joint meeting of the Royal College of Surgeons and Académie de chirurgie, the program included the presentation of experimental and clinical study of infarcts of various viscera by members of the Académie de chirurgie.

Prof Raymond Gregoire reported his work on intestinal infarct. He objected to the use of the term infarct, which is the result of an arterial or venous obstruction. He had provisionally applied the term "inexplicable infarct" to the peculiar bluish or black discoloration seen on the exposed coils of intestine which disappeared immediately after a subcutaneous injection of epinephrine had been given in his first case. Some of his conclusions are reported in an article which appeared in the *International Journal of Surgery*. This type of "inexplicable infarct" forms in a few seconds without any vascular obstruction, hence he preferred the term "apoplexy" to that of infarct. The "apoplexy" may be hemorrhagic or edematous. Instead of being the result of a vascular obstruction, it is the result of such an intensive vasodilatation that it leads to rupture of capillaries and venules. This has led to the use, at least for intestinal and pancreatic "apoplexy," of epinephrine to act as a vasoconstrictor.

The idea that visceral apoplexies were of humoral origin resulted from the observation of a case which presented the clinical picture of acute ileus. A dark colored loop of bowel about 2 feet long, presented when the abdomen was opened. The normal color reappeared immediately after 1 mg of epinephrine had been given subcutaneously. The patient died eighteen months later of a cerebral hemorrhage. Dr Lerat of Brussels operated in a similar case and the patient died six months later, from a cerebral hemorrhage. In his later communications, Gregoire had called attention to the fact that the intestinal infarct observed by him was a local manifestation of an anaphylactic shock just as occurred in infarcts of other abdominal viscera. The question arose as to how such an "intolerance shock" could produce hemorrhagic exudates. It was found that all forms of irritation of the neurovegetative system cause a dilatation of the capillaries, which can progress up to the point of rupture with infiltration of the tissues with blood. Hence visceral apoplexy is the result of stasis by vasodilatation due to irritation of the neurovegetative system. The sequels are gangrene and perforation of the viscus. The indications for treatment are, first, to combat the shock, and second, to operate as soon as possible to note the degree of damage to the individual viscus. Since a paresis of the capillaries is the primary change, a vasoconstrictor in the form of epinephrine is indicated. If the exposed coil of intestine immediately regains its normal color, it can be replaced. If the return of circulation is questionable, the coil should be exteriorized. If the coil is already black, only resection or enterostomy is of any avail.

The second paper was by Prof Pierre Duval, on postoperative pulmonary infarct. There are two varieties, from the standpoint of pathology, a true form, i.e., with vascular occlusion, and a second without such occlusion, which it is advisable to term "apoplexy." The latter had been studied experimentally by the physiologist Prof Leon Binet and by himself. The

classic form presents the symptoms of sudden severe pain in the chest, bloody expectoration and local physical signs following operations under local or general anesthesia. In search for the cause of this "apoplexy" type of postoperative pulmonary infarct, experiments on dogs were undertaken to determine whether a generalized toxemia did not occur as the result of toxic products formed in the tissues devitalized during any operation. Polypeptides obtained from dog muscle were injected intravenously into dogs, or the muscles of cats were crushed, thus releasing polypeptides into the general circulation. Three weeks later these dogs, sensitized to the toxic products of their own or homologous tissues, were given a second injection of polypeptides from dog's muscle. The series of injections was not followed by any pulmonary lesion, but in all the sensitized animals gross and microscopic examination revealed localized foci of hemorrhagic exudation in the pulmonary alveoli. The complete resemblance of these experimental lesions to those observed in human beings has been demonstrated in a case of Cadéac. Thus the pulmonary postoperative apoplexies belong in the group of visceral apoplexies first described by Gregoire. Perhaps the comparative rarity of such complications postoperatively is due to a lack of autogenous sensitization, which many patients possess before operation.

The third paper was by H. Mondor on uterine infarct. He had observed this lesion in thirty cases following death from abortion. Other cases have been reported by Drs Senécal, Huet and Ameline of Paris. The clinical picture is a typical one. Often following the intra-uterine injection of soapy water there follow signs of shock and of generalized toxemia. The uterus is enlarged and tender. The latter condition is also true of the adnexa. On vaginal examination with the speculum, the patches of cyanosis on the cervix are striking. At operation the uterus is found to be very dark or purplish with or without accompanying intense congestion of the adnexa and a blackish infiltration of the parametria. In a recent case in which operation was done very early by Patel and Esquerdan an opportunity was given to study the lesions in their incipience. No bacteria were found, only a thrombosis, both arterial and venous with intravascular hemolysis. The most typical finding in all of the cases, according to Mondor, is the erythrodiapedesis. Infection does not play any part in the process. Soap is a protoplasm poison and causes hemolysis, hence it can give rise to thrombosis without infection and an erythrodiapedesis without preceding thrombosis. The pathogenesis is still being studied. Intoxication of the splanchnic sympathetic can be caused by soapy water, by horse or human serum after sensitization of animals, followed by typical infarct symptoms.

Infarct of the pancreas was the subject of the final paper, by Drs Pierre Brocq and Jacques Varangot, who pointed out that it is difficult in experimental work to imitate conditions found in pathologic conditions of the human pancreas. Although the authors recognized the interest and the importance of local anaphylaxis as reported by Gregoire and by Couvèlaire, they thought that such a theory was not beyond criticism according to their own clinical and experimental observations. The experimental work of Reilly of Paris, although as yet uncontested and even if it shows an abrupt modification of cellular permeability, has as yet not been able to produce an acute necrosis of the pancreas without being associated with infarctions of other abdominal viscera. There are still many unknown factors to discover in acute pancreatic pathology. Epinephrine, ephedrine and general anesthesia (Gregoire) relieve the pain in acute pancreatitis, even if they do not check the anaphylactic changes. To check the pancreatic secretions atropine and gastric lavage with a solution of sodium bicarbonate have been given. The administration of physostigmine solution of sodium chloride and insulin controlled by frequent blood sugar estimations are indispensable. In France experi-

tory laparotomy is extensively employed, to avoid overlooking other lesions resembling acute pancreatitis clinically. Some surgeons believe that drainage of the necrotic areas and of the abundant pancreatic secretion is of value.

VIENNA

(From Our Regular Correspondent)

Sept 11, 1937

Socialized Medicine Decreases Number of New Medical Students

The annual report of Vienna University, published each year at the beginning of the winter semester, contains figures on the distribution, nationality and vocational bent of the students and graduates. During the last year (1936-1937) covered by the report, 1,430 students (about one third of them women) received the doctor's degree in the regular manner from one of the four faculties (law, medicine, philosophy and theology). For seven years past the number of newly graduated doctors has exhibited a steady year to year increase. In 1930, 965 persons received the doctorate and since then the rate of increase has been around seventy each year. One is struck by the interesting fact that the distribution of graduates among the various faculties has remained almost uniform. The law school conferred annually about 40 per cent of all doctoral degrees, the medical and philosophical faculties about 30 per cent each, whereas only some twenty theologians were graduated each year. Only in this last year does there appear an increase in the number of newly graduated doctors of medicine and this is proportionately greater among women physicians. But statistics with respect to medical undergraduates present a quite different picture. Among the total student population of nearly 9,000 there are 3,466 medical students, including 718 women. For the first time in many years a decline in the number of newly matriculated students of medicine is plainly observable. This is an obvious consequence of the bad prospect presented by the medical profession in Austria. Private practice here is being rapidly and steadily ruined by socialized medicine, which offers the population medical services at smaller cost. Furthermore, no appreciable numbers of first year students from eastern and southern Europe (the Balkans) matriculated during 1936-1937. Among the causes for this decline should be mentioned the rule that no foreign (non-Austrian) freshmen may be admitted until ample accommodation has been made for all Austrian freshmen in the laboratories, anatomy classes and so on. If the classes are not filled up by Austrian students foreign students may be admitted. (This rule does not apply to the graduate classes.) The foregoing measure was particularly necessitated by the steady decrease in the number of cadavers available for classes in anatomy and the shortage of space both in the school of anatomy and at the Institute of Physiology and Chemistry. Moreover, the faculty of medicine lacks funds for the construction of larger quarters. Political and religious motives may also underlie this restriction on foreign matriculants, it may be directed against an influx of students from Poland, Hungary and Rumania.

Proposed Revision of Austrian Insanity Laws

The Vienna Psychiatric and Neurologic Association appointed a committee to study the problem of revised insanity laws for Austria. Prominent in the legislative program sponsored by this group is the establishment of state detention institutions for psychopaths who, although not insane within the legal definition are nevertheless a public menace. At present Austrian hospitals for the insane have been conducted as institutions for the sick rather than as places of "detention." Professor Berze in a lecture before the association pointed out that from among psychopaths of the "borderline" type who, in the absence of any definite mental disease, cannot be declared 'insane' are recruited those numerous mentally subnormal criminals who constitute a permanent social menace. If one of these persons

is convicted of an offense he may perhaps receive a light punishment or be placed under observation in a psychiatric institution for a time, then soon released as "not insane" to prey upon society. And this occurs even if the person presents an obvious picture of moral insanity. Under existing Austrian laws, both federal and local, it is impossible to place a criminal of the "borderline" type in permanent detention as the hospitals for the insane are filled to capacity with genuine mental cases. The Vienna psychiatrists recommend not only the "detention" of dangerous psychopaths but a continuous systematic psychiatric supervision of all psychopathic persons. This would assure special legal protection of the noncriminal psychopaths as well. The foregoing legislative reforms should be so implemented as to prevent criminal behavior on the part of psychopathic persons and thus provide truly adequate protection to the public. Any abnormal person who believes that some one has wronged or offended him and who accordingly utters threats, can, under the proposed legislation, be rendered harmless before he has had time to make good his threats. It is hoped that the collaborating jurists and psychiatrists will arrive at some appropriate middle ground between the principle of personal liberty and the conditions mentioned.

BELGIUM

(From Our Regular Correspondent)

Sept 11, 1937

Admission to the Public Hospitals

The question of the admission of nonindigent patients to the public hospitals was placed on the agenda of the twenty-ninth Congress de medecine professionnelle by the Bureau of the Federation medicale belge. Mr de Melinne made it the subject of his report and ended his summary of the situation with the following conclusions:

PUBLIC HOSPITALS

'Considering that public hospitals are, according to the terms of legislation pertaining thereto and the tenor of ministerial pronouncements, designed exclusively for the accommodation of persons who are indigent or public charges,

Considering that the legislative and ministerial regulations are frequently violated by the easily effected admission to public hospitals of nonindigent patients,

'Considering that these numerous and frequent abuses reflect unfavorably on the reputation of the medical profession in general and of those physicians who are serving on the staffs of hospitals, in particular,

The following remedial measures are herewith recommended: reestablishment of a rigorous, compulsory preliminary investigation of all patients who seek admission to a public hospital, this procedure to apply to the treatment of outpatients in the polyclinics as well as to patients who require hospitalization. Supervision of this sort ought to prevent the expenditure of public relief funds for the care of persons able to pay and nonindigent members of the sick insurance clubs, the medical care of whom is underwritten by these organizations. So far as is practicable, every public hospital should contain a section for paying patients wherein the customary rules with regard to choice of a physician and amount of honorariums would apply.

UNIVERSITY HOSPITALS

Resolved that the services of university hospitals ought, like all other hospital services directed by the Public Relief Commission to be primarily reserved for the indigent and semi-indigent sick in accordance with the letter of the statutes and ministerial pronouncements.

Considering how vitally important is the maintenance of a spirit of sincere collaboration between the heads of the various university services and the medical corps as a whole and granting that a university must be guaranteed a sufficient quota of

patients for clinical educational purposes, it is still, however, highly desirable that the commercial rivalry between the relief board and the medical corps should be abolished.

"It is recommended that a strict, compulsory, preliminary investigation be made of any patient who seeks admission to the university hospitals.

"As to medical educational needs, while it is conceded that bona fide members of insurance clubs (who come under the legal definition and who are accordingly not to be confused with insured persons in good circumstances) should be able to receive treatment at the university services, it is recommended that the benefits obtained by these true sick insurance club members should strictly coincide with the scale of sick benefits as customarily contained in the insurance contracts in the particular locality."

The Regulation of Masseurs

Messrs Dam, De Munter and Ledent called the attention of the Societe belge de physiotherapie to the undesirable features of the present system, under which any person no matter how deficient in technical and scientific qualifications can practice as a masseur. Numerous cases were cited in which incompetent masseurs were responsible for accidents to the patient. The authors believe that all persons who wish to practice medical massage should be compelled to undergo a certain prescribed course of training. Successful candidates in the examinations would be awarded certificates of authorization to practice massage. The authors also submitted detailed legislative proposals for the regulation of masseurs.

RIO DE JANEIRO

(From Our Regular Correspondent)

July 15, 1937

Congress of Orthopedics and Traumatology

The second Brazilian Congress of Orthopedics and Traumatology was held in Rio de Janeiro in July. Well known surgeons of the United States, Germany, Argentina and Uruguay were present at the congress, which was organized by the Sociedade Brasileira de Orthopedia e Traumatologia of São Paulo. Drs Achilles de Araujo and Milton Weinberger were president and secretary, respectively, of the congress. Dr Fred H. Albee of New York was the honorary president. The articles presented by foreign surgeons and discussed were the following: The importance of the lever at the top of the femur as a stabilizing influence and its restoration, Dr Fred H. Albee, congenital gibbosity and spine fusion and diseases of the osseous system by Prof Bruno Valentin of Germany, technic and new instruments for nailing fractures of the neck of the femur and results of nailing, Prof Henrique Lagomarsino of Argentina, Treatment of humeral supracondylar fractures, Dr Jose Luiz Bado of Uruguay.

The second official topic of the congress was "Fracture of Neck of Femur." The afternoon session was presided over by Prof Rezende Puech. Pernambuco is the city selected for the third Congress of Orthopedics and Traumatology. Profs Barros Lima and Bruno Maia were appointed president and secretary, respectively, of the coming congress. Official topics will be the treatment of sequels from acute anterior poliomyelitis and fractures of the malleolus. Drs Correa do Lago, Orlando de Souza, Godoy Moreira and Achilles de Araujo are the appointed official speakers.

Virus of Rural Yellow Fever

Dr Lucas de Assumpção lectured recently to the Sociedade de Biologia of São Paulo on work carried out at the Instituto de Hygiene of São Paulo. The work is concerned with the identification of the virus of a type of yellow fever, cases of which developed in rural areas of São Paulo and are not transmitted by *Aedes aegypti*. The speaker pointed out the differ-

ences of yellow fever according to its transmission by *Stegomyia* or without interference of the latter. He studied the blood of twelve patients. The blood was collected from suspected cases by the committee against yellow fever of the department of public health of São Paulo. In five blood samples the virus was identified. Three strains of the virus were dried and kept. They include the viruses of the Rocinha, Parnaíba and São types. The Rocinha strain is also maintained in mice.

Scholarships for Brazilians in the United States

The John Simon Guggenheim Memorial Foundation allows scholarships to students wishing to perform research work at university studies in the United States. The scholarships have been given, up to the present, to students from Chile and Mexico. Dr Henry Allen Moe, secretary of the foundation, recently stated that Brazilian students would have been included in the benefits of the scholarships since 1929 had it not been for the depression. Now that the depression is over, some of the scholarships will be given to Brazilians. A scholarship amounts to \$2,000 a year, which is given by the Guggenheim Foundation to the students for one year and then renewed for one or two more years. The money is given in advance to research workers or to students who wish to do research work or study in the universities of the United States.

Action of Coffee on Basal Metabolism

Dr J. Ribeiro do Valle, in a recent lecture delivered to the Sociedade de Biologia of São Paulo discussed the action of coffee, with or without caffeine, on the basal metabolism. Coffee, as generally prepared in Brazil, contains 2 mg of caffeine for each kilogram of coffee and it raises the basal metabolism. The speaker determined the basal metabolism by means of the Benedict-Roth apparatus on six normal persons. The calculations were based on the Aub-Du Bois formula. The determinations were made at intervals of thirty, sixty, ninety or 120 minutes in different cases, after ingestion of coffee which contained 0.18 per cent of caffeine and was sweetened with saccharin. The average elevation of the basal metabolism, two hours after injection of coffee, was 65 per cent. The administration of coffee which contains the mentioned quantity of caffeine does not induce changes of the pulse and temperature. In five of the six cases observed by the speaker the arterial pressure increased within 4 and 6 mm of mercury. Two persons in the group were given, on another occasion, coffee without caffeine. The basal metabolism slightly increased in one case and lowered in the other one. The results of the speaker's studies agree with those reported by Meyer, Horst and collaborators. Precise conclusions on the subject cannot as yet be established.

Reorganization of the University of Brazil

A law for the reorganization of the University of Brazil and construction of the University City at Rio de Janeiro recently passed the House of Deputies. The federal government is now in charge of the construction of University City, which will cover a large area near the Boa Vista village and will include the faculties of philosophy, education, fine arts, engineering, mining and metallurgy, chemistry and pharmacy, law, politics and economics, agriculture, veterinary medicine and music. There also will be a hospital.

Homage to the Memory of a Nurse

A bronze plate was recently dedicated at the São Sebastião Hospital of Rio de Janeiro to the memory of Maria da Conceição Lopes, a Brazilian nurse who died a victim of her work. The plate was presented by a representative of the government and it was donated by the Association de Enfermeiros e Enfermeiras de Ayuda Mutua of Buenos Aires. During the ceremony, Dr Sinval Lins, the director of the hospital, made a speech on the heroism of Miss Lopes in her professional duties. Dr Deodoro Lopes, a brother of Miss Lopes, thanked the Argentine

sociation of nurses, the Argentine government and their representative as well as the Brazilian government for the homage paid to the memory of his sister

New Hospital

The Carlos Chagas Hospital of Rio de Janeiro was recently opened. Many persons attended the inauguration ceremonies, during which the governor of the Federal District made an address to the memory of Carlos Chagas

ITALY

(From Our Regular Correspondent)

Sept 30 1937

Medical Society Reunion

The Accademia Medica of Rome met recently under the chairmanship of Prof Roberto Alessandri. Professor Jura spoke on the postoperative variations of water in the blood following colonic and parenteral administration of water. The amount of water in the blood increases 2 or 25 per cent after administration of water in surgical interventions. It increases more than that in patients suffering from liver disorders. When the amount of water in the blood is high before a surgical intervention, it may increase to 8 per cent after it. Bang's method for quantitative determinations of water in blood is the most exact.

Professor Baglioni of the University of Rome said that the water in the blood is almost a fixed constant in persons subjected to experimental conditions even if they drink large amounts of water through induced thirst. The laws of the water metabolism are related to the amount of water in the blood, intestinal absorption, emunctory functions of the kidney, lung, skin and intestine and the amount of water in the interstitial lymph and the tissues.

Professor Cappelli said that the blood of patients suffering from cancer is in a condition of qualitative dysglycemia which makes favorable conditions for the exaggerated multiplication of cancer cells. Subcutaneous injections of soluble sulfates cause an acceleration of the consumption of dextrose as well as modifications of the terrain by which the exaggerated multiplication of abnormal cells is restrained and the development of the primary tumor arrested or regressed.

Professor Jura reported results of studies on the variations of the erythrocytes in the blood of dogs after experimental intestinal resection. Following resection of the small intestine in one fifth, one fourth or one third of the total length of the structure, anemia develops. From his experiments the speaker points out that Castle's antianemic factor probably exists in the intestine as it does in the stomach and duodenum.

Prof Gino Meldolesi and W Siedel said that the elimination of bile pigments is increased in patients suffering from myopathies. By using a chromatographic method they determined special pigments in the feces, which are fluorescent to zinc and different from stercobilin and urobilin. They seem to be the terminal product of disintegration of myoglobin. The latter which has a special spectrum, is present in muscle serum of patients suffering from myopathic diseases, whereas from the blood serum and bile of the same patients abnormal pigments can be determined.

Professor Meldolesi said that chromatography which is in common use in analytic chemistry, can be applied to clinical research, purification of substances for analysis the procurement of pigments directly from the blood, bile and feces separation of myoglobin from hemoglobin for later crystallization of myoglobin and examination of normal and pathologic biliary pigments.

Professors Meldolesi and De Orchis studied the behavior of striated muscles in the course of diphtheria scarlet fever, typhus and pneumonia by means of biopsy and chronaximetric methods. In many cases they found precise muscular altera-

tions which are associated with disorders of the metabolism of the glucides and the creatine bodies. The myoglobin metabolism is normal in cases which follow a common evolution. In grave cases with fatty degeneration the myoglobin metabolism is disturbed and the pigment leaves the muscle and causes the appearance of Fischer's second K substance in the feces. In cases of this type persistent muscular alterations take place which induce static and dynamic modifications that are associated with the development of permanent grave changes of the myocardium.

Death of Francesco Della Valle

Dr Francesco Della Valle, lieutenant general of the army and formerly surgeon general in the Italian army, died recently at Puccianello in Caserta. Dr Della Valle was internationally known in the military medical circles. During the World War he was the organizer of surgical ambulances which were placed in charge of university clinicians. By the establishment of quarantine hospitals the country was protected at that time against contagious diseases. Dr Della Valle was president of the second International Congress of Military Medicine and Pharmacy which was held in Rome in 1923. Later he was appointed honorary president of the International Permanent Committee of Military Sanitation. During the time he was surgeon general, this sanitary organization was given the silver medal for the health crusade carried on from 1915 to 1918 and also the gold medal for work in public health.

Marriages

FREDERICK MACDONALD RICHARDSON, Haddonfield N J, to Miss Margaret Jane Ullom of Philadelphia, August 14

WILBUR CURTIS HUNSUCKER, Goldsboro, N C, to Miss Helen Marie McKown in Blackstock, S C, July 5

DAVID DUDLEY STEPHENS, Slocumb, Ala, to Miss Berta Napier of Dothan, in Marianna, Fla, July 22

GEORGE PARROTT ROSEMOND Kinston, N C, to Miss Lois Jean Mason of Cynwyd, Pa, August 21

FRED M DUCKWALL to Miss Mary O Pinkston, both of Kingsport, Tenn, in Knoxville, July 6

ARTHUR EITEL BOYSEN Pharr Texas to Mrs Ruth Mildred Funk of Superior, Neb, February 27

MARION TIMOTHY PLYLER JR, Durham, N C, to Miss Alma Odell Blanchard at Gatesville, July 31

LUDWELL F LEE, Passapatanzy Va, to Miss Mary Nell Woolfolk of Bowling Green, July 30

PHILIPS JOHN CARTER New Orleans, to Miss Mildred Guitreau of Gainesville, Fla July 8

ROGER O DONNELL JR, Washington, D C, to Miss Blanche Rene Simmers of Boston August 7

LOREN F WASSON, Chicago City, Minn, to Miss Helen F Brohaugh of Minneapolis, recently

EDWARD J EDELEN JR, Washington, D C, to Miss Mary Keech at Brvantown Md, July 27

FRANCIS NEWBY MULLIN JR to Miss Frances Tucker Taylor, both of Norfolk Va August 4

JAMES WILLIAM ELLIOTT to Miss Frances Love Jackson, both of Lebanon Va, in August

GLEN WARD PHIPPS Galva, Va, to Miss Frances Graybeal of Christiansburg June 30

MARVIN F WEISSMAN Milford, Ill, to Miss Olive Maxwell of East Moline recently

ALLEN G CALDWELL to Miss Isabella Thomas both of Covington Ky, in July

ROBERT DRANE, Savannah Ga, to Mrs Naomi Everett Gore in New York July 10

IRVING RAFFOGEL to Miss Ruth Natalie Fried both of New York September 29

WILLIAM C GORDON to Miss Stella D Fain, both of Brooklyn September 19

LIVAN M MCBRYDE to Miss Ruth Fennell both of Detroit September 6

Deaths

Walter Jarvis Barlow • Los Angeles, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1892, first Vice President of the American Medical Association, 1911-1912, and chairman of the Section on Practice of Medicine, 1912-1913, past president of the Los Angeles County Medical Association, founder of the Barlow Medical Library, formerly vice president of the National Tuberculosis Association and secretary-treasurer of the California Tuberculosis Association, at one time dean and professor of medicine at the University of California College of Medicine, member of the American Clinical and Climatological Association, during the World War served with the American Red Cross, and with the Veterans Bureau, remaining an examining and consulting physician with the bureau until 1924, director of the Barlow Sanatorium, on the staffs of the Los Angeles County Hospital and the Hospital of the Good Samaritan, aged 69, died, September 3, of bronchopneumonia.

James Nathaniel Jenne • Burlington, Vt., University of Vermont College of Medicine, Burlington, 1881, member of the House of Delegates of the American Medical Association in 1908, 1910 and 1929, dean at his alma mater, and at various times professor of therapeutics and clinical medicine, professor and adjunct professor of materia medica, past president of the Vermont State Medical Society and the Chittenden County Medical Society, veteran of the Spanish-American War, consulting physician to the Mary Fletcher Hospital, consulting surgeon to the Bishop De Goesbriand Hospital, Burlington, and the Fanny Allen Hospital, Winooski, director of the University of Vermont College of Medicine Dispensary, formerly member of the board of trustees of the University of Vermont, aged 77, died, September 9.

H Beattie Brown • Saranac Lake, N. Y., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1890, past president of the Franklin County Medical Society, member of the American Laryngological, Rhinological and Otolological Society, formerly assistant professor of otology at the New York Post-Graduate Medical School, Columbia University, New York, for many years on the staff of the Manhattan Eye, Ear, Nose and Throat Hospital, New York, past president of the Westchester County Medical Society, on the staff of the General Hospital of Saranac Lake, member of the advisory board during the World War, aged 74, died, August 13, of coronary thrombosis and arteriosclerosis.

David Harrower • Worcester, Mass., Harvard University Medical School, Boston, 1884, member and past president of the American Ophthalmological Society, member of the American Otolological Society and the New England Ophthalmological Society, fellow of the American College of Surgeons, consulting ophthalmic and aural surgeon to the Worcester City, Memorial, St. Vincent and Fairlawn hospitals, Worcester Hospital Cottages for Children, Baldwinville, Milford (Mass.) Hospital, Holden (Mass.) Hospital and the Peterborough (N. H.) Hospital, aged 80, died, August 7, of chronic nephritis, duodenal ulcer and uremia.

James Pleasant Matheson • Charlotte, N. C., University of Maryland School of Medicine, Baltimore, 1905, member of the American Academy of Ophthalmology and Oto-Laryngology and the American Laryngological, Rhinological and Otolological Society, fellow of the American College of Surgeons, served during the World War, otolaryngologist to the Charlotte Eye, Ear and Throat and Presbyterian hospitals and the Charlotte Sanatorium, aged 58, was killed, August 5, in an automobile accident, near Hartsville, S. C.

Edward King Root • Hartford, Conn., University of the City of New York Medical Department, New York, 1879, secretary of the Public Health Council 1917-1929, member of the state board of health, 1899-1917, member of the city board of health 1893-1899 and 1904-1907, medical director of the Aetna Life Insurance Company 1899-1933, on the staff of the Hartford Hospital and the Hartford Retreat for many years, aged 79, died, August 12, of heart disease at his summer home in Fenwick.

Carl M. Anderson • Rochester, Minn., Milwaukee Medical College, 1911, assistant professor of otolaryngology and rhinology at the University of Minnesota Graduate School of Medicine, member of the American Academy of Ophthalmology and Oto-Laryngology and the American Laryngological, Rhinological and Otolological Society, consulting physician, section on otolaryngology and rhinology, Mayo Clinic, served during the World War, aged 55, died, August 10, of coronary thrombosis.

John Jenkins Buchanan • Pittsburgh, University of Pennsylvania Department of Medicine, Philadelphia, Pa., emeritus professor of surgery, University of Pittsburgh School of Medicine, past president of the Allegheny County Medical Society, member of the American Surgical Association, fellow of the American College of Surgeons, on the staff of the Mercy Hospital, aged 81, died, August 24.

Fletcher Burr Taylor, Kansas City, Mo., University of Kansas School of Medicine, Kansas City, 1908, member of the Missouri State Medical Association and the American Urological Association, served during the World War, aged 70, on the staffs of the Research Hospital, General Hospital at St. Luke's Hospital, where he died, July 15, of chronic myelogenous leukemia and heart disease.

Charles Meade Thomas, Sunbury, Pa., Jefferson Medical College of Philadelphia, 1910, served during the World War, formerly on the staff of the Mary Packer Hospital, aged 47, died, July 18, of a compound, comminuted fracture of the right tibia and fibula and left fibula, sustained in an automobile accident three years ago, and septic arthritis.

Arthur Otway Peters • Dayton, Ohio, Northwestern University Medical School, Chicago, 1904, past president of the Montgomery County Medical Society, city health officer, editor of the bulletin of the division of health, aged 60, on the staff of the Miami Valley Hospital, where he died, August 6, of cerebral embolism.

Samuel Halcumb Behrend Basch, New York, Albany (N. Y.) Medical College, 1903, member of the Medical Society of the State of New York, on the staffs of the Fordham Hospital and the Manhattan Eye, Ear, Nose and Throat Hospital, aged 55, died, August 5, of coronary occlusion and arteriosclerosis.

George Henry Brinkman, Oneonta, N. Y., University of the City of New York Medical Department, 1888, member of the Medical Society of the State of New York, on the staffs of the Parshall Private Hospital and the Aurelia Osborn Fox Memorial Hospital, aged 73, died, August 2, of myocarditis.

Benjamin Franklin Buzby, Swedesboro, N. J., University of Pennsylvania Department of Medicine, Philadelphia, 1887, past president of the Gloucester County Medical Society, aged 81, on the staff of Haffey's Private Hospital, where he died, August 5, of coronary thrombosis.

Siegfried Spies, Davenport, Iowa, Albert Ludwigs Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1934, Universität Basel Medizinische Fakultät, Switzerland, 1935, aged 26, intern at the Mercy Hospital, where he died, July 2, of hemorrhagic jaundice.

James Henry Downey • Gainesville, Ga., Atlanta Medical College, 1887, member of the Southeastern Surgical Congress, fellow of the American College of Surgeons, on the staff of the Downey Hospital, aged 72, died, August 28, in the Crawford W. Long Hospital, Atlanta.

S. B. Smith, Walnut Grove, Mo., Missouri Medical College, St. Louis, 1896, also a druggist, formerly director of the school board, aged 65, died, July 14, in St. Mary's Hospital, Rochester, Minn., of cirrhosis of the liver and gallbladder disease.

Charles Daniel Steenken • Salisbury, Md., Columbia University College of Physicians and Surgeons, New York, 1896, medical superintendent of the Maryland Tuberculosis Sanatorium, aged 66, died, July 29, of angina pectoris.

Francis Gustavus Swedenburg • Ashland, Ore., Rush Medical College, Chicago, 1900, fellow of the American College of Surgeons, on the staff of the Community Hospital, aged 69, died, July 31, of mediastinitis and pulmonary gangrene.

Oscar Corwen Payne, Humboldt, Kan., Lincoln (Neb.) Medical College of Cotner University, 1903, served during the World War, owner of an emergency hospital bearing his name, aged 68, died, July 31, in Wichita of arteriosclerosis.

Emerit E. Jouett, Carrollton, Ill., Marion Sims College of Medicine, St. Louis, 1891, member of the Illinois State Medical Society, formerly member of the city council, aged 71, died, July 29, of carcinoma of the maxilla with metastases.

Thomas Judson Allison, Rio Grande, Ohio, Baltimore University School of Medicine, 1897, member of the Ohio State Medical Association, was president of the county board of health, aged 67, died, August 3.

John Edward Martin, New Britain, Conn., University of the City of New York Medical Department, 1892, formerly member of the school board, aged 73, died, July 17, in the New Britain General Hospital.

Belle Loomis Reynolds, Santa Barbara Calif., Hahnemann Medical College and Hospital, Chicago, 1880, served during the Spanish-American War, aged 96 died, July 28, of chronic myocarditis

Wilson Gill Bailey, Camden, N J., Jefferson Medical College of Philadelphia, 1891, member of the Medical Society of New Jersey, aged 71 died, August 2, of myocarditis and arteriosclerosis

Perry McSwain Judy, St George, S C., Medical College of the State of South Carolina, Charleston, 1881 also a druggist, formerly mayor, aged 79, died, July 21, of cerebral hemorrhage

John C Sossoman, Midland, N C., North Carolina Medical College, Charlotte, 1915, aged 56, died, July 18 in the Presbyterian Hospital, Charlotte, of appendicitis and peritonitis

Eugene Joseph Minton, Fair Haven N J., University of Louisiana Medical Department, New Orleans, 1877, aged 79, died, July 19, of urinary calculi and hypertrophy of the prostate

John T Martin, Mount Ayr, Ind., Hahnemann Medical College and Hospital, Chicago, 1895, aged 70, died, July 10, at Promise City, Iowa, of erysipelas and chronic myocarditis

Alexander Peter Stewart, Biloxi, Miss., Homeopathic Medical College of Missouri, St Louis, 1883, aged 78, died, July 27, of hypertensive heart disease and chronic nephritis

James Edward Francis Henry ♂ Cranston, R I., College of Physicians and Surgeons, Boston, 1904, aged 59, died suddenly, July 6, of coronary occlusion and diabetes mellitus

Roland Hall Shippey, Wichita, Kan., Denver and Gross College of Medicine, 1903, member of the Kansas Medical Society, aged 63, died, in July, of portal cirrhosis

James M Sullivan, Hayesville N C., Atlanta Medical College, 1886, aged 75, died, July 10, in the Piedmont Hospital, Atlanta, of hypertrophy of the prostate and uremia

Claude Woltz Ashburn, Pilot Mountain N C., Washington University School of Medicine, St Louis, 1927, aged 33, was killed, August 14, in an automobile accident

Mary Augusta Killeen ♂ Dubuque, Iowa, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904, aged 65, died, July 15, of endocarditis

Curtis Bruen, New York, Cornell University Medical College, New York, 1928, aged 32, was found dead, August 29 at Towaco, N J., of poison, self administered

Clayton Allen Brown, Redgate, Md., Baltimore Medical College, 1897, aged 66, died, August 14 of coronary thrombosis, cerebral hemorrhage and arteriosclerosis

H Franklin Eames, Egg Harbor, Wis., College of Physicians and Surgeons of Chicago, 1889, aged 78, died July 30, of arteriosclerosis and cerebral hemorrhage

John E McMahan, Conway, Ark., University of Louisville (Ky.) Medical Department, 1900, aged 77 died, July 31, as the result of an automobile accident

Robert Fendall Chapman Jr ♂ New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895, died, July 1

Alfred John Peel, St Helens, Ore., Western University Faculty of Medicine, London, Ont., Canada, 1895, aged 69, died, July 24, of coronary thrombosis

Millicent Lendora Hutchins, Los Angeles, Hahnemann Medical College of the Pacific, San Francisco, 1903, aged 74, died, July 21, of chronic myocarditis

William Calvin Taylor Sr, Calvert, Texas, Memphis (Tenn.) Hospital Medical College, 1895, aged 72, was found dead, July 17, of coronary occlusion

Elstner H De Berry ♂ Hazlehurst, Miss., College of Physicians and Surgeons, Memphis, Tenn., 1907, aged 65, died suddenly, July 18, of heart disease

Rodman Ellison Sheen, Somers Point, N J., Hahnemann Medical College and Hospital of Philadelphia, 1911, aged 47 died July 12, of pituitary tumor

Frank Jerome Collison ♂ Bluefield W Va., College of Physicians and Surgeons, Baltimore, 1888 aged 69, died, August 8 of acute pancreatitis

Thomas Jefferson Penn, Crandall, Texas, University of Tennessee Medical Department, Nashville, 1890, aged 84 died, July 1, of bronchopneumonia

John Gilmore Neely, Winside, Neb., State University of Iowa College of Medicine Iowa City, 1893, aged 71, died, July 7, of gastric hemorrhage

Fount E Hobdy, Portland Tenn., University of the South Medical Department Seawance, 1901, aged 65 died August 30 of acute lymphatic leukemia

William F Jinks, Suwanee, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1910, aged 76, died, July 25, of arteriosclerosis

Nathan Friedman, New York, University of the City of New York Medical Department, 1895, aged 65, died, July 13, of coronary thrombosis

Oscar Solomon Deitch, Indianapolis, Medical College of Indiana, Indianapolis, 1890, aged 71, died, July 27, of cardiovascular renal disease

Anthony Mathew Bacevicze, Elizabeth, N J., Baltimore Medical College, 1900, aged 66, died, August 10, of malignant tumor of the pancreas

Albert Charles Daves, Los Angeles, Chattanooga (Tenn.) Medical College, 1910, aged 61 died, July 19 of chronic valvular heart disease

John Wilbur Bartlett, New York, Long Island College Hospital, Brooklyn, 1879, aged 80, died, July 13, in the Roosevelt Hospital

Wiser Cox, Bradfordsville, Ky., Kentucky University Medical Department, Louisville, 1904, aged 72, died, August 4, of heart disease

Frank Theodore Page, Durham N C., Leonard Medical School Raleigh, 1908, aged 56 died, July 18, of cerebral hemorrhage

John A E Haugh, Greensburg, Ind., Medical College of Indiana, Indianapolis, 1881, aged 79, died, July 9, of cerebral hemorrhage

Thomas F Collins, Star City, Ark. (licensed in Arkansas in 1903), county coroner, aged 60, died, August 27, of cerebral hemorrhage

Thomas R McElveen, Salley, S C., University of Georgia Medical Department, Augusta, 1896, aged 85, died, July 8, in Dunbarton

George H Barbour, King City, Mo., Northwestern Medical College, St Joseph, 1882, aged 80 died, July 25, of broncho pneumonia

William E Williams ♂ Cambria, Wis., Rush Medical College, Chicago, 1889, aged 77, died, July 26, of coronary thrombosis

George W Clift, Memphis, Tenn., Meharry Medical College Nashville, 1907, aged 60, died July 20, of empyema of the lungs

Sebron Edgar Deal, Tuscaloosa, Ala., Medical College of Alabama, Mobile, 1894, aged 68, died, July 15, of angina pectoris

Maitland W Rendell, Brooklyn, Hahnemann Medical College and Hospital of Philadelphia, 1895, aged 66, died, July 12

Oran Lamar Webster ♂ Holtville, Calif., College of Medical Evangelists, Los Angeles, 1928, aged 38, was shot and killed, July 31

Frank Lebew Roach, Long Beach, Calif., Northwestern University Medical School, Chicago, 1928, aged 34, died, July 9

Arthur Rutherford Perry, Mount Forest Ont., Canada, Trinity Medical College, Toronto, 1900, aged 61, died, July 12

David Archibald Coyle, Lexington, Ky., University of Louisville Medical Department, 1874, aged 85, died, August 10

Morris Frucht, New York, Medizinische Fakultät der Universität Wien, Austria, 1897, aged 63, died, July 16

George Hart Woodland, Vancouver, B C., Canada, Halifax (N S) Medical College, 1901, aged 68, died, July 21

Ward Alexander Collier, Gainesville, Ga., Mississippi Medical College Meridian, 1912, aged 54, died, July 7

John W Shaw, Banks, Ark., Eclectic Medical Institute, Cincinnati, 1884, aged 74, died, July 24, of uremia

Emmett May Finley, Fredonia, Ala., Southern Medical College, Atlanta, 1896, aged 68, died, July 31

J George Eastham, Odem Texas, Eclectic Medical Institute, Cincinnati, 1906, aged 58, died, in July

Silas Clifford Long, Mountpleasant Tenn. (licensed in Tennessee in 1889), aged 82, died, July 10

J Narcisse Boivin, Hull Que., Canada (licensed in Quebec in 1901), aged 61, died, July 19

Royal E Meyers, Santa Monica Calif., Baltimore Medical College, 1897, aged 70, died, July 31

W Z Faust, Lexington, Ga., Louisville (Ky.) Medical College, 1878, aged 83 died, July 13

Robert M Allen, Sharon Tenn. (licensed in Tennessee in 1889) aged 82 died July 29

Correspondence

METRAZOL VERSUS INSULIN IN THE TREATMENT OF SCHIZOPHRENIA

To the Editor—With the hypoglycemic insulin and metrazol convulsant therapies of schizophrenia both already introduced into this country, the rivalry between the two forms of treatment that has already broken out in Europe will soon be carried to these shores. Physicians will be particularly interested in the effect of the controversy on actual therapeutic procedure.

The shock treatment was introduced by Sakel at a meeting of the Gesellschaft der Aerzte in Vienna, Nov 3, 1933. The official report of the society proceedings may be read in the *Wiener klinische Wochenschrift* for Nov 10, 1933. It is stated (page 1372) that the insulin shock treatment consists of the production of severe hypoglycemic shock with coma and epileptic seizures ('Erzeugung von schweren hypoglykämischen Schocks, eventuell mit Koma und epileptischen Anfällen durch hohe Insulindosen'). In the ensuing discussion, Prof Otto Poetzl, chief of the Psychiatric University Clinic, under whose supervision the work was done, declared that 'the essence of the treatment consists of the production of a very severe hypoglycemic shock with epileptic seizures ("das Wesen der Behandlung auf einen sehr schweren hypoglykämischen Schock mit epileptischen Anfällen beruht")'. In the report of the paper in the *Wiener medizinische Wochenschrift* for Nov 18, 1933, the phenomenon of shock is defined (p 1327) as "the production of an epileptiform or comatose condition by means of large doses of insulin ("Herbeiführung epileptiformen oder komatösen Zustände durch grosse Insulindosen")".

L von Meduna of Budapest, who sponsors the metrazol (called cardiazol abroad) convulsant therapy, states that he first began to experiment with camphor convulsions in guinea-pigs on Nov 23, 1933, while the report of this work (Ueber experimentelle Kampferepilepsie) was submitted to the *Archiv für Psychiatrie* in June 1934 and appeared in September of that year. Jan 2, 1934, he says, he produced his first camphor convulsion in a human being. His first report of the successful convulsant treatment of schizophrenia was submitted to the *Zeitschrift für die gesamte Neurologie und Psychiatrie* Jan 18, 1935, and published February 21 of that year.

Sakel, meanwhile, was continuing his work at the Psychiatric Clinic in Vienna, and his results were finally published at length in a series of articles in the *Wiener medizinische Wochenschrift* from Nov 3, 1934, to Feb 9, 1935. This series of papers, since published as a separate monograph ("Neue Behandlungsmethode der Schizophrenie," Vienna, Verlag Perles, 1935) is full of discussion of the epileptic type of reaction. On pages 9 and 10, for example, there are descriptions of the two types of reaction—the comatose reaction and the epileptic seizure. On page 12 the epileptic seizure is again mentioned as an example of a severe shock reaction. Epileptic seizures in the course of treatment are reported in the case histories and there are numerous references to the value of the seizure. I cite a few examples:

Pages 36, 74 and 88. Patient H, who suffered from catatonic excitement (case 7), suddenly became lucid after a severe epileptic shock ("Ich habe einen Fall beobachten können [siehe Fall VII], der schlagartig durch einen schweren epileptischen Schock aus einem schwer katatonen Erregungszustand lucid geworden ist . . .").

Pages 45 and 64. Patient B (case 2) became clear and composed, with full insight into his illness, after a seizure.

On page 109 another case is discussed in which recovery from psychosis followed a status epilepticus.

These observations have been confirmed by other workers (see, for example, *Arch Neurol & Psychiat* 38 192 and 195 [July] 1937 for similar experiences at Bellevue).

Sakel was, however, not the first to observe the beneficial effects of epileptic seizures on schizophrenic patients any more than he was the first to use insulin in the treatment of schizophrenia. G Muller (*Allg Ztschr f Psychiatrie* 93 233, 1930) recognized the beneficial effect of the epileptic seizure on him, but Sakel appears to have been first actually to induce a convulsion in the course of treatment of schizophrenia. The difficulty with the hypoglycemic insulin convulsion, though, was that it was usually unpredictable and not self limited, the hypoglycemic seizure not infrequently introduced further complications or a status epilepticus, so that hypoglycemia had to be terminated when it occurred. Sakel made some attempt to predict an impending seizure by clinical signs and there is, furthermore, evidence in his monograph that he used both camphor and metrazol intramuscularly to provoke seizures (see curve 7 on page 29 of the monograph) long before Meduna's reports were published. One gets the impression however that he at first rather overestimated the danger of seizures and later relied mainly on the hypoglycemic coma as such in the development of his method.

Meduna's work, however, now makes it possible to employ the epileptic seizure more easily for therapeutic purposes. Meduna has performed a twofold service by (1) developing a precise and effective method of producing seizures with intravenous administration of metrazol and (2) promulgating an attractive theory on the mutual incompatibility of schizophrenia and epilepsy. His sponsorship of the convulsant treatment, however, involves the claim that the epileptic shock is preferable to the comatose shock in the treatment of schizophrenia. It is too early to substantiate or disprove this claim. Meanwhile it need not be assumed that the treatments are altogether different and distinct or mutually incompatible. On the contrary, since the insulin treatment has from the beginning recognized and valued the efficacy of epileptic seizures, it must welcome and accept the metrazol-induced seizure as a significant step forward. The physician who finds a patient who benefits from seizures, who cannot develop suitable coma or who is resistant to coma will now be able to increase the frequency of convulsions in the course of treatment by using metrazol. It will be discovered in time whether the comatose reaction is dispensable. The only workers, Angyal and Gyárfás (*Arch f Psychiat* 106 1, 1936) who have so far reported on experience with a large series of cases on metrazol and on insulin conclude that metrazol is indicated in certain cases but report several instances in which patients who were resistant to metrazol responded to insulin. If the exclusively convulsant treatment of schizophrenia by means of metrazol is in the long run to supersede insulin treatment, it must offer additional advantages than those of economy and simplicity.

JOSEPH WORTIS, M.D.

Bellevue Psychiatric Hospital, New York.

"PNEUMOTHORAX FROM EXPERIMENTAL OVERINFLATION OF THE LUNG"

To the Editor—Regarding your review entitled "Pneumothorax from Experimental Overinflation of Lung" of my address before the fourth Federative International Congress of Anatomists at Milan, Italy, which appeared on page 959 of THE JOURNAL of September 18, I wish to record my satisfaction with the manner in which my results have been presented.

Since the original paper was published I have found histologic evidence which confirms my former supposition that air from the overinflated region of the lung was leaking into the sheaths of the pulmonary arteries and veins through minute ruptures in the bases of those alveoli which overlie these sheaths. When a suspension of fine carmine grains in hot gelatin is injected into the previously overinflated part of the cat's lung immediately after the experimental production of pneumothorax and massive collapse, through the catheter used for the

air injection (which was allowed to remain in its former position), I have found in sections made after cooling and suitable fixation of the part that the carmine grains appear in accumulations on the aforementioned alveolar bases and give the impression that they have been filtered out as the gelatin passed from the alveoli, through minute ruptures in their bases into the sheaths of the blood vessels. Gelatin, for the most part showing few or no carmine grains, was found in the vascular sheaths, mixed with the air from the previous interstitial emphysema occasioned by the overinflation. Sometimes streams of carmine granules, leading from the overlying alveolar bases into the swollen vascular sheaths, were found, and these seemed to indicate the sites of ruptures of a size so large that the grains passed through them. These observations were communicated to the Anatomische Gesellschaft in a paper given at its meeting at Königsberg, East Prussia, August 25 and a full report of them will appear soon in the *Verhandlungen* of that society.

C C MACKLIN, M D London, Ont

Professor of Histology and Embryology,
University of Western Ontario Medical
School

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

PROGNOSIS IN TUBERCULOSIS

To the Editor—What is the death rate in pulmonary tuberculosis in cases classified as far advanced when first diagnosed? What is the life expectancy in pulmonary tuberculosis diagnosed as far advanced when first seen? What is the mortality rate following nephrectomy for renal tuberculosis for renal calculi for pyonephrosis and for renal malignancy? What percentage of patients with far advanced pulmonary tuberculosis die of complications such as acute disseminated milary tuberculosis and tuberculous meningitis?

J C NEGLEY M D Glendale Calif

ANSWER—Occasionally a patient with far advanced pulmonary tuberculosis makes a complete recovery, but such occurrences are rare. It is not unusual for the patient with chronic advanced disease to enter on a period of remission and show improvement. Even most symptoms disappear and, so far as external manifestations are concerned, the patient seems well. However, the examination of the chest, including an x-ray film, reveals the fact that disease is still present and sooner or later the majority of such patients have exacerbations and finally die of tuberculosis. Cedric Shaw (*Quart J Med* 2 179 [April] 1933) has called attention to the poor ultimate prognosis when only sanatorium care is used. The majority of patients with pulmonary tuberculosis in the far advanced stage present cavities in their lungs, and cavitation usually justifies a poor prognosis.

In 1928 H L and Lena R P Barnes (*Ann Rev Tuberc* 18 412 [Oct] 1928) reviewed 1454 cases of pulmonary tuberculosis with demonstrable cavitation. Eighty per cent of these patients were dead within a year from the time they were first seen, 85 per cent within three years, 90 per cent within five years and 95 per cent within fifteen years. Thus the ultimate prognosis of far advanced pulmonary tuberculosis is poor. The exceptional case belongs to the Barneses, 5 per cent alive fifteen years after the disease was detected. Such persons may have advanced tuberculosis with no significant external manifestations except cough and expectoration, which they attribute to bronchitis. They may work for years and die in senility only to have their advanced tuberculosis detected at the postmortem table. Almost every physician engaged in the field of clinical tuberculosis for a decade or more is able to cite a few instances of far advanced chronic tuberculosis with symptoms so slight as to incapacitate the patients little or not at all.

While sanatorium care alone usually accomplishes little for the case of pulmonary tuberculosis in the advanced stage, modern methods of treatment, particularly collapse therapy, often change the prognosis favorably. For example Bentley (Medical Research Council Special Report Series, No 215 His Majesty's Stationery Office London 1936) has recently

reported 677 cases treated by artificial pneumothorax in most of which moderate to far advanced disease existed when the treatment was begun. He compared them with a control group consisting of 3329 patients treated by the sanatorium method alone. At the end of five years, the survivals were 20 per cent more among the artificial pneumothorax group than among the control group. In fact, of the 2,013 males in the control group 1,443 were dead at the end of five years and of the 1,316 females in this group 896 were dead in five years.

Many patients with far advanced pulmonary disease cannot have artificial pneumothorax instituted because of the extent of disease in both lungs or the presence of adhesions, which prevent a satisfactory collapse. For those who have their disease confined largely to one lung either on the first examination or after a period of bed rest during which artificial pneumothorax is found impossible, chest surgery is often capable of closing cavities and materially improving prognosis. In fact, many persons are living and some are working in this country who, without such procedures as extrapleural thoracoplasty and paraffin packs, could not possibly have survived. Most persons with chronic pulmonary tuberculosis in the advanced stage have passed through a period of years when the disease was detectable by modern methods of diagnosis but when it caused no symptoms. It is only rarely that the disease becomes far advanced in a short period.

The mortality following nephrectomy for renal tuberculosis is 2 per cent or less (Wilbolz, *Hans J Urology* 21 145 [Feb] 1929). Nephrectomy for renal calculi carries a mortality of from 2 to 35 per cent. However, if nephrolithotomy is performed the mortality is 5 per cent in aseptic cases and 15 per cent in infected cases. When pyelolithotomy is performed, the mortality is 18 per cent in aseptic cases and 33 per cent in infected cases. The mortality is approximately the same when nephrectomy is done for pyonephrosis as in the case of renal calculi. The mortality following nephrectomy for tumor ranges between 5 and 15 per cent in adults and as high as 50 per cent in the infant. These mortality figures following nephrectomy are based on the results of the work of expert surgeons in this field.

Generalized milary tuberculosis is caused by a focus of disease finding its way into a large lymphatic duct or a blood vessel. A common source of such disease is the lymph nodes of the hilar region. These nodes nearly always constitute a part of the primary tuberculous complex. They contain caseous material with a high tubercle bacillus content. When this material burrows through into a vessel, it feeds the blood stream with large numbers of bacilli. The chronic form of pulmonary tuberculosis usually does not increase the involvement of the regional lymph nodes of the hilus to any appreciable extent. Therefore there is little more likelihood of the patient with far advanced pulmonary tuberculosis developing milary disease than the person who has only the primary tuberculous complex with no previous illness from the disease.

In fact, milary tuberculosis is not an uncommon complication among infants who have developed the primary complex as manifested by the positive tuberculin reaction. Usually such infants have little or no evidence of disease in the lungs except the small primary focus but the hilar lymph nodes are definitely involved. Among infants who have been contaminated with tubercle bacilli there is considerable risk from milary tuberculosis within three months after the primary complex develops.

Following this period the risk is decreased but there remains a possibility of the development of milary disease as long as the hilar lymph nodes contain caseous foci, which may be for the remainder of the lifetime of the patient. Thus, apparently normal healthy individuals in all decades of life are seen who fall acutely ill and die in a short time of milary disease. Many such persons never knew that the tuberculous primary complex existed in their bodies, but after illness appeared x-ray examination may or may not have revealed evidence of Ghon tubercle formation in the lung or calcium deposits in the hilar region. The postmortem examination reveals the true source of the milary disease in one of the caseous regional lymph nodes, which had recently poured into the blood stream large numbers of tubercle bacilli. Among adult patients with chronic pulmonary tuberculosis, the incidence of generalized milary tuberculosis is extremely small. It is usually not greater than 1 per cent.

Diffuse tuberculous meningitis has been proved by Rich and McCordock (*Bull Johns Hopkins Hosp* 52 5 [Jan] 1933) to be caused by a previously existing tuberculous focus in or adjacent to the central nervous system. It is probable that such foci are laid down in these parts by neutrophils, which focalize tubercle bacilli in various parts of the body soon after the first infection occurs. As in the lungs, these primary foci usually produce no significant symptoms and may lie dormant

if the exposure continued, an increasing indifference, apathy or melancholy, and always a weakened memory developed. Drowsiness and stupidity would then sometimes pass suddenly into acute mania, or into melancholia with delusions of persecution. These might terminate in recovery or end in incurable dementia."

TREATMENT OF SYPHILIS AND LICENSE TO DRIVE MOTOR CAR

To the Editor—I should like to get your opinion regarding a patient under my supervision for the treatment of syphilis. It was contracted in March 1929. At that time he received a total of twenty injections of a bismuth compound four injections of mercury and fifty tablets of red mercuric iodide. I saw him first in November 1936 because of a severe convulsion. At that time the Hinton Wassermann and Kahn tests were negative. The spinal fluid was normal. An encephalogram and a ven triculogram showed no evidence of a brain tumor. A roentgenogram of the heart and lungs showed a definite increase in the width of the aorta. The electrocardiogram was normal. A diagnosis of cardiovascular and vascular neurosyphilis was made. He has had twelve weekly injections of quinine bismuth iodide 6 grains (0.4 Gm.) accompanied by potassium iodide 20 drops three times daily. The last three weekly treatments have each consisted of 0.3 Gm. of neoarsphenamine. Since the original visit he has had only one convulsion with which he lost consciousness for a few minutes and recovered spontaneously without any after effect. Since January 11 he has had only one mild attack. At that time he did not fall down. He has had a few dizzy spells which were not serious. Since having the neoarsphenamine he has shown rapid improvement physically and seems to be doing as well as can be expected. During the past week he received notice from the state registry of motor vehicles that his license to drive had been suspended. This suspension was done on the advice of the physician who called to see him at the time of the mild convulsion. During the past three and one-half months he has hired some one to drive his car and has made arrangements to continue so until May 1 at least. In your opinion how long should one wait with the present plan of treatment before assuring him and the registrar of motor vehicles that he will be in physical condition to drive his own car?

M D Massachusetts

ANSWER.—Since the diagnosis of syphilis is not adequately confirmed, it would be advisable to consider also other causes of fainting, such as hypoglycemia and carotid sinus syncope (see Ferris, Capps and Weiss *Medicine* 14 377 [Dec.] 1935). Assuming that the patient has syphilis and that he continues his treatment, it would be reasonable to suppose that driving a car would not present exceptional hazards after he had been symptom free for a year.

BASLE NOMENCLATURE IN ANATOMY

To the Editor—Will you please send me any literature that you can on the subject of the Basle nomenclature in anatomy? What I especially want to learn is the various advantages which this terminology has proved itself to have over the older set of names. I should also however like to know the date when and the auspices under which the Basle terminology was adopted. If you can also send me something on the assistance which the nomenclature of Linnaeus has afforded to botanists and zoologists I should appreciate the kindness fully.

T H SHASTID MD Duluth Minn

ANSWER.—The BNA (Basle nomina anatomica) is the product of the Commission on Nomenclature appointed by the Anatomical Society in 1889. Its report (the BNA) was accepted in 1895 at a meeting in Basle Switzerland.

This society was international, in 1895 it had 145 German members and 129 members from other nations. The chairman of the commission was Prof W Krause of Berlin, the members included Prof G D Thane of London, and representatives of several other countries were invited to join it. They were among the ablest anatomists of that time.

The need for it appeared in the multiplication of terms. More than 30,000 were in the literature for 4,500 structures. Wilder Gould and Gage in America, Henle in Germany, and the anatomical societies of Germany, Britain and America had urged the necessity of simplification.

The commission served without pay. The cost of correspondence and mimeographing was about \$3,000, it was defrayed by scientific academies of Germany and Austria-Hungary and by the Anatomical Society.

The plan included only names of descriptive gross human anatomic structures. Personal names were omitted except as some few had become universally adopted and firmly established as to make their omission impossible—these were added in brackets. The governing principles were as follows:

- 1 Each part shall have only one name.
- 2 It shall be in Latin philologically correct. (Most names were in Latin form anyway and Latin is the only international language.)
- 3 It shall be short and simple.
- 4 It need not be descriptive or speculative.
- 5 Related terms shall be similar.

6 Adjectives shall in general be arranged as opposites, as major-minor, superficialis-profundus.

More minute terms used in the medical specialties were omitted.

The work was admirably done. More than five sixths of names previously used locally were abandoned—they were not necessary. The arrangement of terms indicated the normal structure—branches of vessels, nerves and others. The use of these names in the atlases of Spalteholz, Toldt and Sobotta and in the textbooks of all countries led to its adoption almost universally, to the great advantage of medical sciences and of medical students.

The International Association of Anatomists, established later, has continued the revision. It has now a Commission on Nomenclature, including several American members, Professor Jackson of Minnesota is chairman of the American section. The commission has suggested a few changes and is now considering others.

Linnaeus (Carl von Linné, 1707-1778) introduced method and classification into botanic nomenclature. His classification was based on pistils and stamens and his arrangement included genera and species. His names were in Latin form. Previous classifications were based on medical use (Brunfels 1530), on fruits (Caesalpinus 1583), on external appearance (Gerard 1597), on flowers (Ray 1682) and on the corolla (Tournefort 1760).

Linne's system had a better basis than its predecessors, because pistils and stamens are more important organs.

Jussieu and Brown made classifications later which including all parts and all the life history of plants, were better than Linne's.

ASPERMIA AND DELAYED OR ABSENT ORGASM

To the Editor—A man aged 33 single 5 feet 8 inches (173 cm) tall and weighing 175 pounds (79 Kg.) is well developed and nourished. He has dark hair and brown eyes. He is a saw mill worker of good average intellect and gets along well with his employer and fellow workmen. He has the average number of both male and female friends. He sleeps and eats well and enjoys his work. On examination the Kahn test is negative and the hemoglobin, red cells and white cells are normal. The blood pressure is 127 systolic 80 diastolic and the urine is normal. There is normal distribution of the hair of the body. The penis is of average size and the testes are normal in size and sensation. The prostate and urethra are normal. There is no family history of insanity or nervous breakdowns. At the age of 18 he had his first sexual intercourse and at 23 he had gonorrhea which cleared up in about five months under medical treatment. From 23 years of age to 31 he had intercourse with various women but usually not oftener than once a month. From 31 to 32 he had intercourse twice and not at all for the past year. These are his own words. Doctor I think there is something the matter with me. I want to get married but I am afraid to because I will make a nervous wreck out of my wife. I am afraid I would send her crazy. Why? I asked. Because it takes me so long to come and the girl is all nervous and played out. I have gathered these points from the history. From his first intercourse till he had gonorrhea he had noticed no inability to have and hold an erection but he did notice that the time required to work up to an orgasm and ejaculate was longer than normal. As he has grown older there is no inability to have an erection and hold it but there are times when he has no ejaculation and no sense of satisfaction. Intercourse with a prostitute once lasted so long that she refused him further. Another time he had intercourse once a week for three months and was again refused for the same reason. Lately intercourse has been so unsatisfactory that he has not indulged for a year. Now the question of marriage comes up and I am anxious to find a way of helping him. Could you throw any light on the condition?

M D British Columbia

ANSWER.—This is a rather unusual condition known as aspermia. In the typical case, the patient has normal desire and normal erection but, try as hard as he may, he cannot have an ejaculation during coitus. Some of these patients can masturbate with ejaculation, some have wet dreams, and in most of them fluid containing live spermatozoa can be expressed by massaging the prostate and stripping the seminal vesicles. During coitus however, which may be kept up indefinitely, no ejaculation occurs. In some cases, during coitus, the fluid regurgitates into the bladder instead of coming out of the urethra and an examination of the urine after coitus will show the presence of semen.

The condition has sometimes been acquired by the patient holding back his ejaculation during spooning and even during coitus, thus deranging the entire valvular and nervous mechanism. Cases have been reported in which an examination of the prostatic urethra with the urethroscope showed the presence of bands preventing the proper dilatation of the urethra during coitus. In others there is a nervous inhibition during coitus, having the same result.

As regards treatment, the urethra should be examined with the urethroscope and any abnormality found should be corrected. In some instances the ingestion of intoxicants or sedatives will remove the psychic inhibition and effect a cure. All

unnatural and ungratified methods of coitus as well as ungratified sexual excitement (such as spooning) must be forbidden. The condition is difficult and in some cases almost impossible to cure. It is interesting in this connection to note that the operation of presacral neurectomy performed to relieve bladder pain which cannot be relieved by any other method will cause aspermia.

SKIN SENSITIVITY AND HAY FEVER

To the Editor—A medical student aged 26 began sneezing the last week in August and his attacks have continued since. Skin tests revealed sensitivity to timothy, June grass, orchard grass and red top. There was no reaction to ragweed. The patient has not left New York. Please explain the discrepancy between the skin tests and the occurrence time of the symptoms.

MD New York

ANSWER—The sneezing coming on the last week in August and continuing through the ragweed season would certainly suggest hypersensitivity to ragweed. The method of skin testing was not mentioned in the query and it may be that the patient's skin is not especially sensitive. If the first tests were done by the scratch method and were negative to ragweed, intracutaneous tests to ragweed should then be tried beginning with 1:1,000 dilutions and if negative followed by 1:100. If these two also are negative the conjunctival method should be tried. This consists in the application by means of a toothpick of a small amount of raw ragweed pollen to the lower eyelid. A positive reaction is indicated by tears and conjunctivitis, which, if excessive, can easily be relieved by one or two drops of 1:1,000 epinephrine solution. If the patient gives negative reactions to ragweed by all three methods, the scratch, intradermal and conjunctival, almost certainly he is not sensitive to ragweed. In such an event the physician should look for other causes of sensitivity besides ragweed and complete skin tests should be done for foods, molds, animal danders and such miscellaneous substances as house dust, cottonseed and orris root.

Mention is made that positive reactions were obtained for four grasses: timothy, June grass, orchard grass and red top. This does not necessarily indicate that the patient is clinically sensitive to grass pollen but means that the patient is a potential grass hay fever sufferer. An overdose of grass pollen such as might occur from spending June and July among weeds might well precipitate a typical grass hay fever, which might then recur year after year.

TESTS FOR ALBUMIN IN URINE

To the Editor—I have used Heller's test for the detection of albumin in the urine. Lately however I have had a patient who gives a reaction that is not typical. The urine is water clear and varies in specific gravity from a low of 1.004 to a high of 1.018. He is 42 years old. There are no casts in the centrifugated specimen. The acid is put carefully into a dry tube and the urine is run down the side of the tube. There is no immediate reaction at the point of contact. About three to five minutes after the test is made in about half of the specimens a delicate ring shows up just above the point of contact. It is always opaque but sometimes it is of a delicate purple. Is this an ordinary reaction for a trace of albumin or is it something else? It is a matter of insurance for a personal friend and I am puzzled as to whether it is to be counted as a positive or negative albumin test.

JOSEPH R. LATHAM, MD, New Bern, N. C.

ANSWER—The Heller test is excellent for routine work but must be checked by more delicate methods when there is any doubt concerning its accuracy. There are several substances which form rings with nitric acid which are not serum albumin.

Nucleoalbumin forms a ring about 1 cm. above the point of junction. Epithelial cells, white cells and red blood cells are usually the cause of the nucleoalbumin.

Urea forms a crystalline white ring at or near the point of junction.

Bence-Jones protein also forms a ring at the junction and must be differentiated by the heat test.

Colored rings at the junction are frequent in highly concentrated urines with nitrogenous waste products.

There are several points which speak against this patient having albumin: (1) delay in the appearance of the ring; (2) the appearance of the ring above the point of contact; and (3) the purple coloration of the ring. In the absence of casts, blood and white cells in the urine, and a specific gravity which has such a wide range, pathologic albuminuria would seem to be unlikely. Orthostatic albuminuria should be considered and samples of urine after exercise and after rest should be tested. Tests for albumin by the heat acetic acid and either the sulfosalicylic acid or the trichloroacetic acid methods should also be employed. Either of these three methods is more delicate than is the Heller test. A kidney function test should also be done.

ALCOHOLIC BEVERAGES ON BREATH

To the Editor—How much whisky, brandy or gin can be ingested without becoming detectable on the breath at a distance of one foot of the feet?

EMILIO L. HERBERT, MD, Brooklyn.

ANSWER—This question is difficult to answer because of numerous unknown factors, such as the time interval between drinking and sniffing, cooperation on the part of the exhaler, consumption of food, particularly garlic and onions, halitosis from other sources, the use of mouth washes, and the acuity of the sense of smell of the investigator. Since mere gargling with alcoholic beverages may have a large sphere of influence it is evident that there is no quantitative relationship between amount consumed and fragrance.

PERCENTAGE OF LOSS OF VISION

To the Editor—I have a patient who has an industrial loss of central vision. He has complete loss of central vision. The visual acuity for distance is only 20/200. Naturally there is no binocular vision present. What would your opinion be with regard to the percentage of loss? Would it be 75 per cent or would it be considered only for function, as reported in the 'Estimated Compensation for Eye Injuries'?

W. R. HICKMAN, MD, Logansport, Ind.

ANSWER—According to the compensation table adopted by the American Medical Association in 1925, further information is needed before an estimation of percentage of loss can be made in this case. Central visual acuity of 20/200 for distance represents a percentage loss of 80 per cent, but that applies only to one function. There must be taken into account the central visual acuity for near, the field of vision, and the question of diplopia, not to mention the visual acuity for near and for distance of the uninjured eye. Furthermore, it must be stated whether the vision obtained is with the best possible correcting glass.

NAUSEA OF PREGNANCY

To the Editor—I would greatly appreciate a statement on the latest theory concerning nausea of pregnancy. Would the fact that cholesterol which is formed in diminishing amounts in the blood of pregnant women have any bearing on the production of nausea during pregnancy? If this is so would the administration of a product consisting essentially of glycocholic tetracetate, fel bovis and cerium isovalerianate correct this condition?

JOSEPH MANDELBERG, MD, Brooklyn.

ANSWER—There is no satisfactory explanation of the nausea that occurs during pregnancy but undoubtedly the psyche plays an important part. Only about 50 per cent of pregnant women have this symptom. Contrary to the statement made in the query, cholesterol is not decreased during pregnancy but definitely increased. Slemmons and Stander believe that the striking increase in cholesterol during gestation is at least in part a preliminary provision for lactation. It is impossible to say whether the substances mentioned will overcome the nausea associated with pregnancy but if they prove to be successful a large part if not all of this benefit will be due to the psychic effect of the administration of medicine.

TETANUS ANTITOXIN NOT A SUBSTITUTE FOR DIPHTHERIA ANTITOXIN

To the Editor—If one had a bad case of diphtheria and had tetanus antitoxin would one be justified in giving tetanus antitoxin for the diphtheria? I gave a child tetanus antitoxin by mistake for diphtheria and the case cleared up as nicely as any case of diphtheria I ever treated with diphtheria antitoxin. Is it not the foreign protein in the antitoxin that does the work and not the particular germ used in its manufacture? Please omit name.

MD, Tennessee

ANSWER—The specific curative action of diphtheria antitoxin is due to the antitoxin that neutralizes the diphtheria toxin in the patient. A physician would not be justified in giving tetanus antitoxin in place of diphtheria antitoxin in patients suffering from diphtheria.

TRAUMA IN RELATION TO DIABETES

To the Editor—I have a patient who is afflicted with diabetes. He claims that this diabetes did not exist prior to the time he received an injury to the sixth cervical vertebra and I can see no connection between the diabetes and the injury to this vertebra. Do you have a treatise on this subject?

M. V. WICKER, MD, Wayland, Ky.

ANSWER—A volume issued March 17 by Lea & Febiger, South Washington Square, Philadelphia, bears the title 'Trauma in Relation to Disease'. One of the articles in it is entitled 'Trauma in Relation to Diabetes' and it is written by Elmer P. Joslin, MD.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL SCHOOLS

ALABAMA Montgomery June 28 Sec Dr J N Baker 519 Dexter Ave, Montgomery

ARKANSAS Basic Science Little Rock Nov 1 Sec Mr Louis E Gebauer 701 Main St Little Rock Medical (Regular) Little Rock Dec 21 22 Sec Dr L J Kosminsky Texarkana Medical (Eclectic) Little Rock Dec 21 Sec Dr Clarence H Young 1415 Main St Little Rock

CALIFORNIA Reciprocity Los Angeles Nov 10 Sec Dr Charles B Pinkham 420 State Office Building Sacramento

COLORADO Basic Science Denver, Dec 15 16 Sec Dr Esther B Starks, 1459 Ogden St Denver

CONNECTICUT Medical (Regular) Hartford Nov 9 10 Endorsement Hartford Nov 23 Sec Dr Thomas P Murdock 147 West Main St Meriden Medical (Homoeopathic) Derby Nov 8 9 Sec Dr Joseph H Evans 1488 Chapel St New Haven

DELAWARE Dover, July 12 14 Sec Medical Council of Delaware Dr Joseph S McDaniel 229 S State St Dover

DISTRICT OF COLUMBIA Basic Science Washington Dec 27 28 Medical Washington, Jan 10 11 Sec Dr George C Rubland 203 District Bldg Washington

FLORIDA Jacksonville Nov 1 16 Sec Dr William M Rowlett Box 786 Tampa

IOWA Des Moines Nov 8 10 Dir Division of Licensure and Registration Mr H W Grefe State Department of Health State House Des Moines

KANSAS Topeka Dec 14 15 Sec, Board of Medical Registration and Examination Dr J F Hassig 905 N 7th St Kansas City

KENTUCKY Louisville Dec 7 9 Sec State Board of Health Dr A T McCormack 532 W Main St Louisville

MAINE Portland Nov 9 10 Sec Board of Registration of Medicine Dr Adam P Loughton 192 State St Portland

MARYLAND Medical (Regular) Baltimore Dec 14 17 Sec Dr John T O'Mara 1215 Cathedral St Baltimore Medical (Homoeopathic) Baltimore Dec 14 15 Sec Dr John A Evans 612 W 40th St Baltimore

MASSACHUSETTS Boston Nov 8 10 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 F State House Boston

MISSISSIPPI Reciprocity Jackson Dec Asst Sec State Board of Health Dr R N Whitfield Jackson

NEBRASKA Lincoln Nov 15 16 Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEVADA Carson City, Nov 1 3 Sec Dr John E Worden Carson City

NEW HAMPSHIRE Concord March 10 11 Sec Board of Registration in Medicine Dr Fred E Clow State House Concord

NORTH CAROLINA Endorsement Raleigh Dec 6 Sec Dr B J Lawrence 503 Professional Bldg Raleigh

NORTH DAKOTA Grand Forks Jan 4 7 Sec Dr G M Williamson 4 1/2 S 3rd St Grand Forks

OHIO Columbus Nov 30 Dec 3 Sec State Medical Board Dr H M Platter 21 W Broad St Columbus

OKLAHOMA Basic Science Oklahoma City Dec 1 Sec of State Hon Frank C Carter State Capitol Bldg Oklahoma City Medical Oklahoma City Dec 8 Sec Dr James D Osborn Jr Frederick

OREGON Basic Science Portland Nov 20 Sec State Board of Higher Education Mr Charles D Byrne University of Oregon Eugene

PENNSYLVANIA Philadelphia Jan Sec Board of Medical Education and Licensure Dr James A Newpher 400 Education Bldg Harrisburg

SOUTH CAROLINA Columbia Nov 9 Sec Dr A Earle Boozar 505 Saluda Avenue Columbia

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VERMONT Burlington Feb 8 Sec Board of Medical Registration Dr W Scott Nay Underhill

VIRGINIA Richmond Dec. 8 10 Sec Dr J W Preston 28 1/2 Franklin Road Roanoke

WEST VIRGINIA Charleston Nov 8 10 Sec Public Health Council, Dr Arthur E McClue State Capitol Charleston

WISCONSIN Basic Science Milwaukee Dec 11 Sec Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee Medical Madison Jan 11 14 Sec Dr Henry J Gramling 2203 S Layton Blvd Milwaukee

NATIONAL BOARD OF MEDICAL EXAMINERS
SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL October 23 page 1387

Oklahoma June Examination

Dr James D Osborn Jr, secretary, Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, June 9-10, 1937 The examination covered 12 subjects and included 120 questions An average of 75 per cent was required to pass Forty-nine candidates were examined, all of whom passed The following schools were represented

School	PASSED	Year Grad	Per Cent
New York University, University and Bellevue Hospital Medical College	(1934)	82	
University of Oklahoma School of Medicine	(1934)	84	
(1937) 90 • 81 • 82 82 • 83 • 83 • 83 • 83 • 83 • 81 • 84 • 84 • 84 • 84 • 84 • 84 • 84 • 85 • 85 • 85 • 85 • 85 • 85 • 86 • 86 • 86 • 86 • 86 • 86 • 87 • 87 • 88 • 88 • 88 • 88 • 89 •			
Baylor University College of Medicine	(1935)	82	

Ten physicians were licensed by reciprocity from January 5 through July 20 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine	(1905)		Arkansas
Howard University College of Medicine	(1914)		Kansas
University of Kansas School of Medicine	(1917)	(1920)	
(1935) Kansas			
Tulane University of Louisiana School of Medicine	(1932)		
(1934) Louisiana			
Washington University School of Medicine	(1927)	(1935)	Missouri
Baylor University College of Medicine	(1926)		Texas

* License withheld pending completion of internship

Florida June Examination

Dr William M Rowlett, secretary, State Board of Medical Examiners, reports the examination held at Jacksonville, June 14-15, 1937 An average of 75 per cent was required to pass One hundred and forty-four candidates were examined, 121 of whom passed and 23 failed The following schools were represented

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1935)	77	84 1/2
Atlanta Medical College	(1897)		75
Emory University School of Medicine	(1934)	70	
77 3, 82 (1935) 81 2 85 5 (1936) 77 (1937) 76 4, 76 8 77 78 7 81 82 82 3, 82 4 82 5 82 8 83 83 85 5 86 6			
University of Georgia Medical Department	(1912)	80	(1931) 75
University of Georgia School of Medicine	(1933)		75
(1935) 79 3 80 8 81 (1936) 79 4 (1937) 75 80 2, 82, 86 8			
Loyola University School of Medicine	(1918)		76 1
(1926) 75 3 (1928) 78 4			
Northwestern University Medical School	(1937)		84*
Rush Medical College	(1921)		82 6,
(1931) 82 4 (1934) 79 7 (1935) 75 5, (1937) 75			
School of Medicine of the Division of the Biological Sciences	(1933)		87 2
University of Illinois College of Medicine	(1914)		77 8
(1922) 76 4 (1928) 81 5 (1929) 78 2 (1932) 76			
(1933) 81 9 (1935) 80 (1937) 80 8			
University of Louisville School of Medicine	(1937)		76
Louisiana State University Medical Center	(1934)		77 1
(1936) 75 1 (1937) 79 8			
Tulane University of Louisiana School of Medicine	(1923)		81 2
(1931) 79 8 (1937) 76 9 81, 81 2, 81 4, 82 82 82 9 83 3 83 4 84 8			
Johns Hopkins University School of Medicine	(1912)		76 8
(1937) 84 7			
Harvard University Medical School	(1933)		84 8
Tufts College Medical School	(1933)		82 1
University of Minnesota Medical School	(1931)		82 4
St Louis University School of Medicine	(1927)	79 7	(1935) 79 5
Washington University School of Medicine	(1931)		83 5
(1933) 81 (1937) 82 6			
Cornell University Medical College	(1936)		84 4
Long Island College of Medicine	(1930)	78 8,	(1936) 83 5
New York University, University and Bellevue Hospital Medical College	(1932)		81
Syracuse University College of Medicine	(1925)		75
Eclectic Medical College Cincinnati	(1936)	75	(1937) 82
Miami Medical College Ohio	(1909)		73 4
Ohio Medical University	(1903)		75
Ohio Miami Medical College	(1911)		70
University of Cincinnati College of Medicine	(1937)		78*
Western Reserve University School of Medicine	(1915)		79 1
Hahnemann Medical College and Hospital of Phila	(1934)		79 8
Jefferson Medical College of Philadelphia	(1926)		78 4
(1929) 83 6 (1935) 82 5			
Temple University School of Medicine	(1935)	81	(1937) 82
University of Pennsylvania School of Medicine	(1933)		83 7
University of Pittsburgh School of Medicine	(1916)		76 4
(1929) 81			
Woman's Medical College of Pennsylvania	(1935)		82
University of Tennessee College of Medicine	(1931)		79
(1932) 78 82 3 (1934) 75 8 (1935) 79 (1936) 82 4			
Vanderbilt University School of Medicine	(1924)		76 1
(1928) 77 (1929) 83 (1934) 85 2 (1937) 84			
Baylor University College of Medicine	(1936)		78 3
Medical College of Virginia	(1934)		79 7
University of Virginia Department of Medicine	(1899)		86
(1933) 83			
University of Wisconsin Medical School	(1929)		79
Queen's University Faculty of Medicine	(1912)		79 4
Western University Faculty of Medicine Ontario	(1917)		75
McGill University Faculty of Medicine	(1932)		80 9
Universidad de la Habana Facultad de Medicina y Farmacia	(1907)		79 1/2
University of St Andrews Conjoint Medical School Scotland	(1934)		77

School	FAILED	Year Grad	Per Cent
University of Arkansas School of Medicine	(1936)		73 4
College of Medical Evangelists	(1933)		70 2
Georgetown University School of Medicine	(1935)		69
Emory University School of Medicine	(1927)	72	(1933) 73
Chicago College of Medicine and Surgery	(1917)		66 8
College of Physicians and Surgeons of Chicago	(1905)		74 8
Loyola University School of Medicine	(1921)		63 5
(1922) 62 7 (1936) 70 7			
University of Illinois College of Medicine	(1913)		72 1
University of Maryland School of Medicine	(1908)		66 6
St Louis University School of Medicine	(1926)		71

Washington University School of Medicine	(1913)	72 4
Columbia University College of Physician and Surgeons	(1917)	72 7
University and Bellevue Hospital Medical College	(1917)	73 3
Ohio Miami Medical College	(1911)	72 3
Hahnemann Medical College and Hospital of Phila	(1897)	72 7
Jefferson Medical College of Philadelphia	(1901) 36	(1931) 72
University of Pittsburgh School of Medicine	(1913)	72
University of Tennessee College of Medicine	(1931)	71 3
Queen's University Faculty of Medicine	(1924)	73 4

* This applicant has received the M B degree and will receive the M D degree on completion of internship
† Verification of graduation in process

Book Notices

Neurology By Roy R Grinker M D Chairman the Department of Neuropsychiatry of the Michael Reese Hospital Chicago Second edition Cloth Price \$8 50 Pp 999 with 406 illustrations Springfield Illinois & Baltimore Charles C Thomas 1937

Three years has elapsed since the publication of the first edition of this competent work on neurology. Modern neurology advances so rapidly that extensive revisions have been required in this time. For instance, much has been learned concerning the vegetative nervous system and the functions of the central cortical centers. There have been extensive advances in the knowledge of the cerebral cortex. During the past three years there have been serious epidemics of encephalitis and in St. Louis particularly there have been two extensive epidemics of a special type not seen elsewhere and, therefore, especially classified as of the St. Louis type. Electroencephalography has been introduced as a method of study, highly technical in character, and its use has been applied to various neurologic disturbances. Moreover, new treatments have been developed for myasthenia gravis and myotonia congenita, involving drugs not previously applied in these conditions. In fact, there is some question as to the exact value of some of these new preparations. Nevertheless, enough has already been learned to indicate that prostigmin and atropine do produce definite effects in myasthenia gravis. In myotonia quinine has been much used and here also the subject is still under investigation. As in previous years there have been new treatments for migraine but there is still an intricate classification and an outline of treatment based on extensive studies. It is observed that the author speaks of the use of cannabis in increasing doses—an old form of treatment among neurologists but one that is gradually passing into desuetude. A recent governmental action relating to the control of this product may result in its elimination from the list of useful preparations.

This textbook of neurology is remarkable in its completeness. The author has apparently made a constant and extensive survey of available medical literature and he has attempted to integrate the new information with well established data so that there is hardly a subject on which the user of the book will not find some valuable material. Again the publisher is to be commended for the quality of the publication. The book is printed in clear type on fine stock and all the pictures are artistically developed, well selected and instructive. A comprehensive index completes the work.

Morphologische Pathologie Eine Darstellung morphologischer Grundlagen der allgemeinen und speziellen Pathologie Von Prof. Dr. Werner Hueck Direktor des Pathologischen Instituts der Universität Leipzig Paper Price 52 marks Pp 818 with 811 illustrations Leipzig Georg Thieme 1937

The material presented in this book corresponds to that encountered in a textbook of general and systemic pathology, though the author deliberately avoids so describing it. He wishes to reserve for himself the right to decide which of his subjects are the more important, which should be discussed more fully, and which may be omitted. Therefore he chooses "Morphologic Pathology" as a title, implying a treatise on morphologic principles of general and systemic pathology, not necessarily complete. Yet he follows the old principle, and in going over the book one is immediately aware of the fact that, as in similar textbooks the subject is divided into two parts, general pathology—termed "general morphologic pathology"—and systemic pathology—termed "applied morphologic pathology." However, in the chapter dealing with diseases of the respiratory tract, pneumonia, tuberculosis, emphysema and car-

cinoma are discussed, whereas diseases of the trachea, bronchi, infarcts and syphilis of the lung are not mentioned. Some of these diseases are discussed in other relevant chapters or are contained in the part dealing with general pathology. Diseases of the nervous system are not considered in a chapter. There is, however, a chapter on tumors of the nervous system and a few lines are devoted to syphilis. The development of the heart and anomalies of the heart, extensively discussed, at least more exhaustively than in textbooks on pathology. Such a selection of subjects may be of course intentional, since, as the author states, special subjects not being adequately discussed in this volume may be found in much greater detail in various monographs. The selection of special subjects and the more detailed treatment of some of the chapters will be welcome to those who already have a working knowledge of pathology. However, the medical student who wants to find in an individual chapter a treatment of all the various diseases encountered in a particular organ or system of organs may at times be disappointed. It thus provides a volume of information which for the experienced will be helpful but for the beginner may be confusing. The book is easily comprehensible and is simply written. Long, complicated sentences are avoided. It is thorough and modern, discusses the most recent theories impartially, and is thus neither dogmatic nor too conservative. The reader is impressed with the author's profound knowledge, which is evident in every chapter. Most of the illustrations are reproductions of drawings, which are excellent. Special features are schematic drawings, which illustrate and clarify the development of various cell groups. The book is well assembled, clearly printed and has an adequate index but no bibliography.

Les maladies du pharynx Clinique et thérapeutique Par C. Esch, professeur de clinique oto-rhino-laryngologique à la Faculté de médecine de Strasbourg, Avec la collaboration de MM. Reverchon, professeur de clinique oto-rhino-laryngologique à la Faculté libre de médecine de Liège, Truffaut, oto-rhino-laryngologiste de l'Hôpital Bon Secours (Paris) et le concours de Ch. Wild, chef de clinique oto-rhino-laryngologique à la Faculté de médecine de Strasbourg. Cloth Price 200 francs Pp 250 with 216 illustrations Paris Masson & Cie 1936

With the exception of the textbooks by Heyman, Katz, Blumenfeld and Denker-Kahler, the present volume is the first to deal exclusively and extensively with the diseases of the pharynx. The book embraces a wide variety of topics many of which are usually given scant attention in the average textbook. Here, however, the laryngologist will find them thoroughly and adequately treated in a fashion that will reflect the best of recent literature. It is gratifying to find such subjects as parapharyngeal infections, the prophylaxis and treatment of hemorrhage, paresthesias of the pharynx, sepsis of tonsillar origin, malignant tumors and focal infection given the space they merit. Our knowledge of these subjects has in recent years been widened through many valuable contributions to the literature, with which most laryngologists are familiar. It is therefore of immense value to the specialist to be able to find them all gathered into one volume. Naturally the French point of view on some of these topics does not coincide with that which is held in this country or in England or Germany. However, such differences as may be noted are not of major importance. For instance the elaborate classification of malignant tumors seems too intricate in view of the tendency in this country toward simplification. The author's nomenclature is also not wholly in conformity with custom here. It is strange to find no mention of lympho-epithelioma or transitional cell carcinoma, although the illustrations of "epithelioma cylindriques" and "sarco-endothelioma reticulare" seem to denote tumors that would be designated by these terms. However, the story of these tumors from histopathology and diagnosis to treatment is well told and leaves nothing to be desired. Carcinoma of the nasopharynx is particularly well handled. The illustrations showing the anatomic relationship of the tumors most frequently involved in the spread of the disease are presented in such a manner as to clarify the symptoms, which in these cases is so diverse. Most of the illustrations throughout the book are original and serve their purpose admirably. Naturally in a book of this size coming from a foreign clinic one finds many things with which one is not familiar. The old Mikulicz tonsil clamp is of interest in this country and suturing the pillars for the control of tonsillar

tonsil bleeding is also rarely used, yet both procedures are advocated and illustrated in this book. On the other hand the author's views on electrocoagulation of the tonsils coincide almost exactly with those most recently expressed in symposiums before our national societies. There is one suggestion that might be offered to the author of this excellent work as well as to all foreign writers, which, if heeded, would do much to increase their popularity here, namely, that they extend their bibliographies to include more English and American references. Most American authors, on the contrary, are particular about citing all noteworthy foreign literature.

Sex and Personality Studies in Masculinity and Femininity By Lewis M. Terman and Catharine Cox Miles. Assisted by Jack W. Dunlap et al. Cloth. Price \$4.50. Pp. 600 with 16 illustrations. New York & London: McGraw-Hill Book Company Inc. 1936.

There is probably no name with which the scientific psychology world is more familiar than that of Lewis M. Terman, who standardized the modern Binet test, which is used in the United States and which has now been applied to many millions of people. He is known to the cognoscenti for his excellent work concerning the differences in the thinking processes of the superior child and the near-genius. Such monumental works are only a sampling of the excellent contributions which the senior author of the present volume has made to the science of psychology. The junior author, Catharine Cox Miles, has already published an excellent study of the social psychology of sex, so that there are probably no two people who are, together, better equipped to study the problem predicated in this book. The present volume is an outgrowth of Terman's earlier studies of genius and here is presented a battery of word association tests, tests of emotional and ethical attitudes and other tests which he has devised and which seem to set off the masculine type of personality from the feminine. There is considerable detail in this book to establish the standardization of each of the subtests in the whole battery, and in interpreting the significance of the test as a whole in relation to such traits as age, domesticity and work adjustment. Particularly there is correlated the masculine and feminine test score with physical measurements, personality and achievement, age, education and intelligence, occupation and domestic milieu. The authors include also some chapters discussing homosexual individuals, and there are also case studies devoted to this type as well as to the masculine and feminine types of delinquent girls. There are seven appendices, consisting mostly of the tests themselves, and various types of norms and conversion tables, which make the work a well rounded scientific piece of reporting. No psychiatrist, medical psychologist or physician who is interested in sexual pathology can afford to be unacquainted with it. The tests will undoubtedly be modified and improved as time goes on. But even at this stage of development these tests and their results are a distinct contribution and well worthy of perusal.

Practical Psychology for Nurses and Other Workers in Mental Hospitals By W. J. T. Kimber, L.R.C.P., D.P.M., Medical Superintendent, Hill End Hospital for Mental and Nervous Disorders, St. Albans. Cloth. Price \$1.25. Pp. 103. New York & London: Oxford University Press, 1937.

The opinion has been expressed even by British psychiatrists that psychiatry in the United States offers leadership to that on the European continent and to that practiced in Great Britain. Whether this opinion is actually true or not, the present volume leads toward that conclusion. It is a tiny volume within which the author attempts to explain the workings of the Freudian psychology, Adlerian psychology and general technique in the psychological handling of patients. He devotes the last fourth of the book to brief discussions of mental disease entities, which are so brief that they neither give a picture of the disorders nor give the nurse a practical idea of what she is up against in handling such patients. What, perhaps, this book should be called is a very elementary psychopathology rather than a psychology. The psychoneuroses and feeble-mindedness are given only a few paragraphs. The idea of deep therapy is scarcely touched on. One wonders what the real purpose is. Even the discussions of Freudian and Adlerian mechanisms are inaccurate although one must admit that they follow the general concepts of the adherents to these special forms of psychological mechanics. The directions given to the nurse in two chapters on how to draw the patient back into

reality are scarcely more than a rather detailed discussion of the everyday means used in hospitals of interesting the patient in his surroundings and in activities which might be made available for him. Occupational therapy is touched on but only briefly, and the involved, carefully developed occupational therapy techniques in use in this country do not seem to be within Dr. Kimber's ken. In a like fashion one finds nothing about systematic recreational proceedings, so often carried out by nurses in America, and real nursing, such as the administration of bath, packs, hospital management and dietetics, all of which have a definite psychological plan if properly understood, are given no consideration. Kimber devotes a chapter to the place of the social worker, but apparently he employs social workers only as home visitors. He probably would be surprised to know how in the United States the social worker, who so seldom is a nurse, handles the case under the direction of a psychiatrist from the point of taking the initial history, making the home investigation and actually carrying out therapy in the home and with the patient. It can be seen, then, that for mental hospital nurses in this country this book can have but little point.

Milk and Nutrition. New Experiments Reported to the Milk Nutrition Committee. Part I. The Effect of Commercial Pasteurization on the Nutritive Value of Milk as Determined by Laboratory Experiment. From the National Institute for Research in Dairying (University of Reading) and the Rowett Research Institute, Bucksburn, Aberdeen. Paper. Price 2s. 6d. Pp. 67 with illustrations. Shinfield, Reading: National Institute for Research in Dairying, 1937.

This pamphlet consists of an interesting series of reports made to the English Milk Nutrition Committee on the effect of commercial pasteurization of milk on its nutritive value, as determined by chemical, physical and biologic methods. Physical and chemical means were used to determine the effect of pasteurization with regard to vitamin A and carotene and to vitamin C. In the studies on the nutritional availability of calcium and phosphorus, on the biologic value of milk proteins, on the vitamin B complex, and on the total nutritive value of milk, rats were used in pairs equalized as to litter and sex, and receiving equal amounts of raw or pasteurized milk. Basal diets fed in addition to the milk were also equalized within pairs. The results of the experiments are reported in tables and a statistical appendix is included. It was found that the nutritional availability of calcium and phosphorus and the biologic value and digestibility of the proteins were not affected by pasteurization. In order to prevent a nutritional anemia in the rats fed on milk exclusively, iron, copper and manganese were added to the feedings, and such supplementary diets, with pasteurized milk as the basis, were found not inferior to raw milk thus supplemented. Vitamin A and the provitamin carotene were not affected by the heat treatment, but vitamin B was, probably in the more unstable B₁ fraction. There was a loss of about 20 per cent in vitamin C in the experiments, a loss which the authors declare is not due to the pasteurization factor alone. The extent to which these results can be applied to the problems of human nutrition and the general advisability of the pasteurization of milk for human consumption are to be discussed in a future report pending the results of feeding experiments now being carried on in calves and in children. This report, and those which follow, will be of interest to biochemists, pediatricians, dairymen and students of nutrition.

Interprétation du fonctionnement du système nerveux par la notion de subordination. Subordination et posture. Par Pierre Mollaret, médecin des hôpitaux de Paris. Préface du Professeur J. Lapicque. Paper. Price 60 francs. Pp. 441. Paris: Masson & Cie, 1937.

The work of Lapicque and his collaborators on chronaximetry and allied topics—mainly the influence of the central nervous system on the electrical excitability of peripheral structures (subordination)—is presented by the author with abundant details and enthusiastic conviction. Stress is laid on clinical observations and literature, even when but indirectly related to the subjects under discussion. The bibliography contains almost exclusively French and German publications; authors of other nationalities are mentioned only as quoted by French commentators. Thus, figure 16 is reproduced from an article by Rosenbluth and Morison and this article is not included in the bibliography. Similarly the chapter devoted to the theory of chemical transmission of nerve impulses does not give any references to Cannon, Feldberg or Dale. An utter

disregard of the overwhelming adverse criticism that has recently been published concerning many of Lapique's statements about isochromism, curarization, subordination and "iterative" systems results in an artificially cogent body of knowledge. The book should be useful for anybody interested in the opinions of authors who favor Lapique's ideas concerning the excitability of nerve centers, nerves and muscles, and the corresponding literature, on the other hand, the book is not adequate for the needs of a reader interested in finding out what is the present status of the problem.

The Etiology of Mental Deficiency with Special Reference to Its Occurrence in Twins. A Chapter in the Genetic History of Human Intelligence. By Aaron J. Rosanoff M.D. Levi M. Handy M.A. and Isabel Rosanoff Plesset B.A. Psychological Monographs Volume XLVIII No. 4 Whole No. 216. Edited by John F. Dashiell. Paper Price \$2 Pp 137. Princeton N. J. Psychological Review Company 1937.

This is one of several reports concerning the analysis of a collection of 1,014 pairs of twins with some kind of mental disorder in one or both of the twins in each pair. Previously published studies in this series have dealt with the etiology of mongolism and with that of epilepsy. This report deals exclusively with mental deficiency. The arbitrary range for mental deficiency is placed at 79 points I Q and lower. In the whole collection of twins there were found to be 366 pairs one or both of whom were mentally deficient. Of these, 126 pairs were diagnosed by the Siemen resemblance method as monozygotic, 101 pairs as same-sexed dizygotic, and 139 pairs were opposited-sex twins and therefore dizygotic. Siemen's concordance-discordance method in a modified form was used in the analysis. The authors conclude that only a little more than half of the cases of mental deficiency are of hereditary origin. The rest of the cases are attributable to a variety of conditions that might be classed as environmental and include damage to germ cells, fetal and intranatal factors, premature birth (which is prevalent among twins), underweight at birth, and perhaps most important of all, cerebral birth trauma. Many of the discordant cases of twins involved complications attributed to birth trauma, such as infantile cerebral palsies, epilepsy and allied conditions. In 43 per cent of all subjects with mental deficiency there were complications involving palsy, epilepsy, psychotic manifestations, child behavior difficulties, juvenile delinquency and adult criminality. Sex was shown to be a conditioning factor in mental deficiency. There was a significant preponderance of deficient males as compared with females. The authors consider that about one fifth of this is due to sex-linked factors and the rest to greater vulnerability of males to birth trauma. The whole study bears the marks of careful scientific method, unbiased analysis of results, and conservatism in conclusions. It well illustrates the great value of twin materials and of the twin method in the study of the heredity-environment problem.

Aids to Pathology. By Harry Campbell M.D. FRCP and Kenneth Campbell OBE M.B. FRCS. Seventh edition. Cloth Price \$1.50. Pp 263 with 12 illustrations. London: Baillière Tindall & Cox. Baltimore: William Wood & Co. 1936.

Six previous editions have proved the usefulness of this little book, which for its size contains a remarkable amount of information. It is a concise treatise of general and systemic pathology to which the clinical picture has often been added. The style is somewhat dogmatic and thus certain inaccuracies are found, such as the statement that aneurysm leads to hypertrophy of the left ventricle. One unusual feature is the use of classical quotations in describing certain phases of diseases; for instance, the description of syphilis by Shakespeare. It is also interesting to read in such a small volume, in the chapter on coronary arteries, that John Hunter died of coronary thrombosis. The book is written for the use of the student and the practitioner. While the former will gain much information, it may be a little confusing to him because of the abundance of material presented. On the other hand such graphic descriptions as "it may be said that the malignant cells at one time orderly members of the cell community harmoniously cooperating with the other tissues of the body for its welfare as a whole, become rebels and traitorously turning on that will doubtless simplify for the student some of the problems which in larger textbooks are usually set forth in a less imaginative style."

Quelques vérités premières (ou soi distant telles) en urologie. Par G. Marion, professeur de clinique urologique à la Faculté de médecine de Paris. Collection publiée sous la direction de MM. L. Ombredanne et V. Flessinger. Paper Price 24 francs. Pp 61. Paris: Masson & Co. 1936.

This brochure is one of a series of compendiums or "precepts" devoted to a specialty in medicine or surgery. Marion succinctly phrases dogmas which he considers fundamentally important in urology. His desire is to establish a program of examination and treatment that will be valuable in practice, and he realizes that further progress will lead to new precepts and axioms tomorrow. There is little that is new in this brief compend, but it will be of great value to the student and stimulating to the practitioner as a brief review course. A few precepts taken at random will show the terse phraseology: "To think that all renal calculi are accompanied by pain will lead to failure of diagnosis in many renal stones. Many stones manifest themselves only by pyuria, others by hematuria, others by the abrupt onset of anuria, and some are absolutely latent."

In cases of tuberculous epididymitis it always is necessary to thoroughly study the urine to determine whether the urinary tract is also affected. Often renal tuberculosis is present and is latent, and its proper care is of major importance.

Introduction to the Rorschach Method. A Manual of Personality Study. By Samuel J. Beck, Ph.D., Head of the Psychology Laboratory Department of Psychiatry, Michael Reese Hospital, Chicago. With a preface by F. L. Wells, Ph.D., Monograph No. 1 of the American Orthopsychiatric Association. Cloth Pp 278. Menasha, Wisconsin: George Banta Publishing Company, 1937.

This book is written to aid investigators and clinicians in the use of Rorschach's ink blot "tests" in the study of personality. The writer assumes a familiarity on the part of the reader with the tests. He endeavors to establish a "normative objectively stable standard of procedure" in the use of the ink blots. He presents in detail fifty-nine case records, among which are represented ten different groups of subjects ranging from healthy adults of superior intelligence to neurotic and psychotic groups of cases. The responses of the subjects to the ink blots, the author's scoring of each response and his interpretations of the observations on each subject are given. These case records constitute the first half of the book. The second part deals with the experimental technique in application of the test material, and exact procedure in scoring the responses. There is little question that in the hands of one expert in the method the Rorschach ink blots constitute a useful and penetrating device for a diagnostic approach to personality study. Dr. Beck's book should do much to clarify many uncertainties in the use of the test. His work makes it possible for investigators working with the ink blots to compare their scorings and observations with much greater definiteness and precision than has been possible heretofore. Dr. Beck's work warrants the most careful attention from workers interested in objective methods of studying personality. He has adhered closely to the original principles laid down by Rorschach but has introduced those modifications in scoring indicated by his own considerable experience. As a guide and aid in the use of the method, it will be found to be second only to the original *Psychodiagnostik* of Rorschach.

Wissenschaftliche Forschungsberichte. Naturwissenschaftliche Reihe. Herausgegeben von Dr. Raphael Ed. Liesegang. Frankfurt a. M. Band XLII. Experimentelle Mutationsforschung in der Vererbungslehre. Beeinflussung der Erbanlagen durch Strahlung und andere Faktoren. Von Dr. W. Timoféeff-Ressovsky. Genet. Abt. des Kaiser Wilhelm Instituts für Hirnforschung. Berlin-Buch. Paper Price 15 marks. Pp 181 with 58 illustrations. Dresden & Leipzig: Theodore Steinkopff, 1937.

This is a collection and organization of all the results obtained in the mutation research of the science of genetics in the years 1914 to 1936. In the first chapter the author gives a short but comprehensive review of facts and definitions of the science of genetics. In the second chapter the experiments of the Lamarckian school are discussed from the historical point of view and criticized. Chapter III deals with the modes and means of experimental influence of the "erbang" (process of heredity). Chapter IV deals with spontaneous mutation processes. Chapter V is the most important. It deals with the induction of mutation by short wave radiations. Muller's first experiments on *Drosophila* are included. Chapter VI is an analysis of all the mutation producing factors of radiations. It con-

tains ideas on direct and indirect effects of radiations and the influence of secondary factors, it shows the relation between the rate of mutation and the doses of radiations, the rate of mutations and the intensity of radiations, the rate of mutation and wavelength and kind of rays. Chapter VII is an analysis of the mutability produced by radiation. Chapter VIII deals with the production of mutations by temperature and other external factors. Chapter IX shows the nature of the mutation process and the gene structure. The tenth and final chapter gives the practical applications of the results of experimental mutation research. The bibliography will be found most complete and useful to students of this field. The plates and pictures are excellent.

Post Mortem Appearances. By Joan M. Ross, M.D., B.S., M.R.C.S., Morbid Anatomist to Royal Free Hospital, London. With preface by E. H. Kettle, M.D., Professor of Pathology and Bacteriology, Welsh National School of Medicine, Cardiff. Third edition. Cloth. Price \$2.50. Pp. 243. New York & London: Oxford University Press, 1937.

The major portion of the book is a concise review of gross morbid anatomy, while in a few pages the author describes the technic of postmortem examinations in a rather cursory way. A relatively large section is devoted to deaths from other causes than disease. In this section the observations in instances of chemical poisoning are reported. This is helpful even the larger textbooks frequently do not refer to medicolegal cases of this type. In general the various diseases are discussed by citation of examples. Acute rheumatism, for instance, the author discusses by describing the external appearances of the patient who died from this disease and by enumerating the abnormalities of the cardiovascular system, the respiratory system, and so on. This method has its advantages in that the student becomes familiar with the various diseases through the medium of individual case discussions, but it is difficult for the beginner to follow because a classification of diseases according to systems is not given. The book is well written and will probably be useful to students for the purpose of rapid general review in preparation for examinations.

Die Entwicklung der Lungentuberkulose des Erwachsenen. Dargestellt in schematischen Tafeln und in röntgenologischen Verlaufsserien. Von Dr. Wilhelm Kremer, dirigierender Arzt der Heilstätten Beelitz. Mit einem Geleitwort von Dr. Frischbier, ärztlicher Direktor der Heilstätten Beelitz. 15. Heft. Praktische Tuberkulose-Bücher. Beilhefte des Deutschen Tuberkulose-Blattes. Herausgegeben von Prof. Kurt Klare, Scheldeg Allgäu. Paper. Price 4 marks. Pp. 37 with 55 illustrations. Leipzig: Georg Thieme, 1936.

Dr. Kremer's monograph is devoted to the evolution of pulmonary tuberculosis in adults. He reviews the work of Ranke in dividing the disease into three stages, the first consisting of the primary infection, the second of generalization and the third of the development of phthisis in certain organs. The illustrations show the various steps in the development of tuberculosis from the appearance of the primary complex to the far advanced stage of the disease.

Health Questions Answered. By W. W. Bauer, B.S., M.D., Director of Bureau of Health and Public Instruction, American Medical Association. Cloth. Price \$2. Pp. 368. Indianapolis & New York: Bobbs-Merrill Company, 1937.

To one engaged in public health education the questions asked by the public on matters pertaining to health are a constant source of interest and amazement. This book contains several hundred such questions. Even if no attempt were made to answer the questions, the book would make interesting reading because it would tell one how the public thinks. The medical profession is very prone to become highbrow, but the public as revealed by these questions is interested in matters much closer home. The second point of interest is the ingenious manner in which these questions on every subject under the sun have been answered. Answering health questions is not an easy project. One is under the difficult assignment of satisfying the person asking the question, himself, and the ideals of scientific medicine. This is not easy when the layman has a poor understanding of the subject and the doctor an inadequate experience in expressing technical facts in clear, simple language. We strongly recommend this book to persons who by virtue of their work are frequently called on to answer the layman's questions.

The Basis of Clinical Neurology. The Anatomy and Physiology of the Nervous System in Their Application to Clinical Neurology. By Samuel Brock, M.D., Associate Professor of Neurology, College of Medicine, New York University. Cloth. Price \$4.75. Pp. 360 with 72 illustrations. Baltimore: William Wood & Company, 1937.

This book is intended to present neuro-anatomy and especially neurophysiology mainly from the standpoint of clinical usefulness. It is divided into twenty-four chapters to include the peripheral nervous system, spinal cord, brain stem, cerebellum, epithalamus, extrapyramidal systems, the brain, the vegetative nervous system, posture and the cerebrospinal fluid. The author has ably described in his introduction changes in the nervous system brought about by evolution. There is considerable information in every chapter. Many questions pertaining to neurologic signs and symptoms are adequately answered. The language used is simple and easy to read. This volume is recommended for students, teachers and clinicians because the author has included much of the recent work published regarding all functions of the cerebrospinal system.

Atelektasen bei kaverner Lungen-tuberkulose. Von Dr. med. Peter Roth, Assistenzarzt, jetzt an der Heilstätte Lindenhof der LVA Sachsen, Chirurgische Klinik, Coswig/Dresden. Nr. 64. Tuberkulose-Bibliothek. Beilhefte zur Zeitschrift für Tuberkulose. Herausgegeben von Dr. Franz Redeker, Oberregierungs- und Obermedizinalrat, Berlin, und Dr. Karl Diehl, dirigierender Arzt, Sommerfeld. Paper. Price 7.20 marks. Pp. 59 with 40 illustrations. Leipzig: Johann Ambrosius Barth, 1937.

In this volume, attention is called to the fact that atelectasis is an old subject but that our knowledge of it as a complication of tuberculosis is relatively recent. Ten cases are described in considerable detail and illustrations of roentgenograms of the chest are presented. Tomography was employed to study the extent of cavities in the atelectatic lung. An extensive bibliography is included.

El grupo indeterminado de las afecciones malignas de los ganglios linfáticos (linfogranulomatosis atípica). Por el Dr. N. Puente Duany. Paper. Pp. 94 with 47 illustrations. Havana, Cuba: A. Sánchez Velez, Editor, 1937.

This little monograph contains a clinical and histopathologic study of ten cases of atypical Hodgkin's disease. After a review of the literature on the subject each case is considered in detail, with special emphasis on the clinical features, the blood picture and the histopathology of lymph nodes subjected to biopsy. The author points out many atypical features, both clinically and histologically. The monograph will be of interest particularly to those pathologists who are studying diseases of lymph nodes.

The Business Side of Medical Practice. By Theodore Wiprud, Executive Secretary of the Medical Society of Milwaukee County. Cloth. Price \$2.50. Pp. 177 with 21 illustrations. Philadelphia & London: W. B. Saunders Company, 1937.

This is a compact, readable work that meets a long recognized need in the medical profession. It can be read by any physician in a few hours, and there will be few physicians who will not gain considerable profit from reading it. The discussions of such subjects as office management, necessary financial records, case records and filing and the proper handling of patients' accounts are straightforward and so well illustrated that misunderstanding is difficult. The author does not recommend a complex "system" of bookkeeping or collections such as so often cumber similar books. The discussion of legal matters properly confines itself to warnings as to the character of the knowledge that is needed and the necessity of securing expert advice when more difficult problems appear. The chapters on public speaking and preparation of a manuscript are wisely elementary and confined to essential suggestions. The book will not make accountants, lawyers, writers or orators out of physicians but it will help them to avoid difficulties in such amateur excursions into these fields as are constantly necessary.

Tomographische Diagnostik der tuberkulösen Kaverne. Von Kurt Freidenker, I. Assistent am Röntgeninstitut der Klinik. Nr. 62. Tuberkulose-Bibliothek. Beilhefte zur Zeitschrift für Tuberkulose. Herausgegeben von Dr. Franz Redeker, Oberregierungs- und Obermedizinalrat, Berlin, und Dr. Karl Diehl, dirigierender Arzt, Sommerfeld. Paper. Price 3.00 marks. Pp. 18 with 24 illustrations. Leipzig: Johann Ambrosius Barth, 1937.

The illustrations illustrate beautifully this special method of making films of the chest, which show more clearly the extent of pulmonary cavities than the usual method.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts Compensability of Sequelae of a Cold—The claimant, Amann, in the course of his employment as a truck driver for a transportation company, was exposed to the rain and to chilling winds because of the lack of glass in the windows of the cab. He contracted a severe cold. Congestion of his throat, chest and lungs associated with an elevated temperature and the coughing up of blood developed. Finally he was forced to go to bed, where he remained for about three weeks. He then attempted to return to work but was so weak and suffered such pains and aches that he went back to bed. Thereafter he was unable to perform manual labor. He claimed that as a result of his illness he tired easily, was unable to work more than a few minutes at a time, that his heart had been affected causing him pain and suffering at intervals, that he had lost weight and was debilitated, and that his lungs had been affected and weakened. The industrial accident board denied him compensation under the workmen's compensation act of Texas, whereupon he brought suit to set aside the board's decision. From a judgment of the trial court denying relief, he appealed to the court of civil appeals of Texas, Fort Worth.

The purpose of the workmen's compensation act, said the court, is to compensate an employee for injury sustained during the course of employment. The injury contemplated is defined by the act as "damage or harm to the physical structure of the body and such diseases or infection as naturally result therefrom." It was not contemplated that the act should cover health insurance. It is a matter of common knowledge that colds, influenza and pneumonia are the result of germs attacking the body and that many such germs appear to be in the very atmosphere surrounding us at all times. Any and every person is exposed to them without being conscious of the fact. Medical science teaches that human beings fall victims of these germs because at the time they are not physically able to withstand the assaults of the germs. If, said the court, the employee in this case is permitted to recover compensation, then every employee who is engaged in labor which tires the body and causes what the layman calls a "run-down condition" can recover compensation by showing that his work weakened him and lowered his resistance and caused him to succumb to the attack of any disease, which he would otherwise have been able to resist. Attempts so to enlarge the purpose of the workmen's compensation act will destroy its usefulness.

Accordingly, the court of civil appeals affirmed the judgment of the trial court upholding the order of the industrial accident board denying compensation.—*Amann v Republic Underwriters (Texas)*, 100 S W (2d) 778.

Workmen's Compensation Acts Municipal Hospital Not an Industrial Enterprise, Compensability of Injury to Orderly—The workmen's compensation act of Maryland provides that if a municipality shall engage in any extra-hazardous work in which workmen are employed for wages the provisions of the act shall be applicable to such employment. The city of Baltimore operated a municipal hospital wherein medical and hospital services were rendered free to the poor of the city and which housed the aged and indigent. Paul A. Trunk was employed as a head orderly in the hospital, subject to the orders of the head nurse and those of the superintendent. While he was engaged in assisting another employee in moving a heavy steel locker, the door of the locker flew open and struck his back below the right shoulder blade and near the spine. Fifteen months later Trunk died from a "malignant lung condition," which, according to the testimony of the medical experts, developed as a consequence of the blow on his back. His wife instituted proceedings to obtain compensation under the workmen's compensation act. The state industrial accident commission disallowed the claim. The superior

court of Baltimore city reversed the order of the commission, and the employer appealed to the Court of Appeals of Maryland.

The city contended that Trunk, being employed as an orderly at a wage of \$1,200 a year, payable in installments every half month, was not a workman for wages within the meaning of the workmen's compensation act. An orderly, said the court, is primarily a male attendant in a hospital who is charged with the maintenance of order, cleanliness, and with the duty of giving menial services and personal attention. If one of the class is placed in a supervisory position with respect to the others of the class, he remains obliged to perform the common services of the class whenever so directed by his employer or whenever an order for any of such services to be discharged would arise because he is said to be other than an orderly. Trunk's position as an orderly, the court said, did not take him out of the operation of the act when his duties were servile and not professional, and, particularly, when his injury was sustained in an accident which happened while he was engaged in manual labor within the ordinary duties of an orderly.

In *Mayor, etc., of Baltimore v Smith*, 168 Md. 458, 171 A 903, continued the court, it was held that a nurse injured during the course of her employment in a municipally owned and operated charitable hospital was not entitled to compensation because a public charitable hospital is not an industrial enterprise nor is a trained nurse, in the course of her vocational employment, a workman within the contemplation of the act. In the present case, the court said, the charitable hospital, as such, was not an industrial enterprise nor specially declared to be an extra-hazardous employment by the workmen's compensation act. Consequently, an employee of the hospital, if injured within the scope and course of his employment, would not be entitled to compensation unless his particular work at the hospital was "work of an extra-hazardous nature," and there was no evidence that it was in the present case. The judgment of the superior court for the claimant was therefore reversed.—*Mayor and City Council of Baltimore v Trunk (Md)*, 190 A 756.

Venereal Diseases Liability of Municipality to Prisoner Who Contracts Disease from Fellow Prisoner—Lewis was a prisoner in the jail maintained by the city of Miami. In the present action he alleges that the city failed to segregate a fellow prisoner who had a venereal disease and as a result of this failure he, Lewis, contracted the disease. The trial court sustained the demurrer interposed by the city on the theory that in maintaining and operating a jail the city was performing a governmental function and was not liable for injuries sustained incident to the performance of that function. The plaintiff thereupon appealed to the Supreme Court of Florida.

A Florida statute, said the Supreme Court, makes it unlawful for any person infected with a venereal disease to expose another person to infection and by necessary implication it is unlawful for the legal custodians or keepers of infected persons knowingly to neglect to protect others likewise within their keeping or custody from exposure to such infection. Municipal prisoners are within the custody of the municipality as a public corporation. There was a time when all municipal functions were governmental and therefore municipal corporations were wholly free from responsibility for torts or civil wrongs. This rule of municipal nonliability for torts is now recognized as to all functions whereby the municipality acts simply as an agency of the state for governmental purposes unless a contrary rule is provided by statute. But as to the corporate powers and responsibilities now residing in municipalities that are outside the narrow range of functions heretofore classed by the common law as purely governmental, municipal liability in an action in tort may exist even where the injury is the result of neglecting a positive duty or inhibition enjoined on the municipality by law. In the corporations of the present day, jails and workhouses are maintained for the detention of persons not only for the offenses that were within the range of municipal action at common law but for a multitude of other offenses than those

bition of which is designed to promote the corporate well being of the city more than to advance the performance of its governmental functions. So, in maintaining a jail, a municipality may be said to be maintaining an institution for its corporate as well as its governmental purposes, under a modern conception of municipal corporations as partly business and partly governmental institutions. The liability in the present case, continued the court, depends on whether the city of Miami neglected to carry out the mandatory duty enjoined on it not knowingly to expose persons in its official custody to infection by others known by its authorities in charge to be venereally infected. The court felt constrained to hold that in the present appeal the declaration to which the demurrer was sustained stated a good cause of action for the negligent breach of this statutory duty necessarily resting on municipal corporations. The judgment of the trial court was therefore reversed with directions to overrule the demurrer and to proceed with the case according to law.—*Lewis v City of Miami (Fla.)* 173 So 150

Privileged Communications Hospital Records, Death Certificates, and Autopsy Reports as Privileged—Official hospital records, said the St Louis court of appeals Missouri properly identified, and shown to have been kept pursuant to statutory requirements, are admissible in evidence as an exception to the hearsay rule but they are nevertheless subject to an objection on the ground of privilege arising by virtue of the confidential relationship of physician and patient.

A state statute declaring that certificates of death, when properly certified, "shall be prima facie evidence in all courts and places of the facts therein stated" means that the certificate shall be admissible as against an objection based on the ground of hearsay, such a statute does not undertake to make the certificate admissible as against a proper claim of privilege. Obviously, a physician in making out a death certificate is required to give information which he acquired from his patient while attending him in a professional character, information necessary to enable him to prescribe for the patient. The court could see no reason why such a certificate should be any more immune to a claim of privilege than would have been the testimony of the physician who executed it. The question of the admissibility of a certificate of death as against a claim of privilege should be determined, the court said, in the light of the same considerations as govern the question of the admissibility of a hospital record. While it is true that from its nature and the purpose intended to be served by it a certificate of death may be expected to be subject to a greater degree of publicity than a hospital record, the measure of publicity which a particular public record may receive, the court said, does not affect the question of its privileged status when the record is sought to be made use of in a private controversy involving a person in a position to assert the privilege.

With respect to autopsy reports, the court thought that on both reason and the decided weight of authority such reports were not privileged, and especially so where the information was acquired by an autopsy on the body of a person who was not, prior to his death, a patient of the physician who performed the autopsy.—*Key v Cosmopolitan Life, Health & Acc Ins Co (Mo.)*, 102 S W (2d) 797

Accident Insurance Death from Veronal Poisoning—The supreme court of New York, appellate division held that death resulting from an overdose of veronal (barbital) unintentionally taken was a death occurring as a result of "bodily injuries effected solely through external, violent and accidental means." *Mansbacher v Prudential Ins Co (N Y)*, 287 N Y S 486 abstr THE JOURNAL Feb 13, 1937, page 585. On appeal the Court of Appeals of New York, in affirming the judgment of the supreme court said that the deceased intended to take veronal but did not intend to take a lethal dose nor did he intend to take enough to do him any harm. He desired to get relief from pain, not relief from life. He took too much veronal. It was a mistake a misstep, an unexpected effect from the use of his prescribed medicine. His death was therefore caused by accidental means.—*Mansbacher v Prudential Ins Co of America (N Y)* 7 N E (2d) 18

Society Proceedings

COMING MEETINGS

American Society of Tropical Medicine New Orleans Nov 30 Dec 3
Dr N Paul Hudson Dept of Bacteriology Ohio State Univ
Columbus Ohio Secretary
Society of Surgeons of New Jersey Trenton November 20 Dr Walter
B Mount 21 Plymouth Street Montclair Secretary
Southern Medical Association New Orleans Nov 30 Dec 3 Mr C P
Loranz Empire Bldg Birmingham Ala Secretary
Southern Surgical Association Birmingham Ala Dec 7 9 Dr Alton
Ochsner 1430 Tulane Ave New Orleans Secretary
Western Surgical Association Indianapolis Dec 3 4 Dr Albert H
Montgomery, 122 South Michigan Blvd Chicago Secretary

THE AMERICAN RHEUMATISM ASSOCIATION

Fourth Annual Meeting and Sixth Conference on Rheumatic Diseases
held in Atlantic City N J June 7 1937

LORING T SWAIM, M.D., Boston, Secretary

(Continued from page 1396)

The Effect of Jaundice on Chronic Infectious Arthritis and on Primary Fibrositis

DR PHILIP S HENCH, Rochester, Minn In 1933 before this association I reported a phenomenon experienced by twelve rheumatic patients who had become jaundiced. My present report summarizes further observations on two additional groups of cases (1) studies on thirty-one rheumatic patients who experienced this phenomenon and (2) of equal importance, studies on four patients with atrophic arthritis and on nine patients with other types of articular and neuritic complaints who did not get relief of symptoms coincident with jaundice.

Of the thirty-one patients who experienced the phenomenon, nineteen had atrophic arthritis. Among the arthritic patients the average duration of disease was 55 years. Eight of the nineteen arthritic patients developed intrahepatic jaundice from cinchophen. The average duration of their jaundice was 45 weeks. Remissions in arthritic symptoms lasted from five to forty three weeks (average 135 weeks). Nine of the arthritic patients developed intrahepatic jaundice from other causes than cinchophen. Jaundice lasted an average of 115 weeks, remissions from arthritis lasted from five to thirty-nine weeks (average 175 weeks). Two arthritic patients developed obstructive jaundice (stones) lasting an average of 135 weeks. Symptomatic remissions induced thereby lasted in one case seven weeks, in another, eighty two weeks.

The duration of disease among the nine fibrositic patients was 52 years prior to jaundice. Six developed cinchophen jaundice which lasted an average of 48 weeks. Remissions from symptoms of fibrositis lasted an average of thirty nine weeks (from four weeks to three years and nine months). Two fibrositic patients developed obstructive jaundice from stones. Jaundice lasted an average of three weeks, remissions lasted five weeks in one case, two years in another. One fibrositic patient developed obstructive jaundice from carcinoma of the ampulla of Vater. Jaundice lasted fourteen weeks but the patient was completely relieved of fibrositic symptoms until death forty-four weeks after the onset of jaundice.

The two patients with lumbrosacral and sciatic pain and the one with secondary arthritis of the hips had symptoms for an average of 23 years before the onset of intrahepatic jaundice. The average length of both jaundice and remissions was five weeks.

Observations were made on four patients who had repeated attacks of jaundice. During attacks of severe jaundice they had complete relief of rheumatic symptoms but with attacks of mild jaundice no relief from rheumatic symptoms was noted. Four additional patients with atrophic arthritis who developed mild jaundice (with concentrations of serum bilirubin below 4 mg) noted no relief from arthritic symptoms. The effect of jaundice is apparently quantitative rather than qualitative. The zone of the therapeutic effectiveness seemed to be at or above a level of about 8 to 10 mg of bilirubin per hundred cubic centimeters of serum. The phenomenon appears to be relatively specific for atrophic arthritis and primary fibrositis.

The relief from rheumatic symptoms was noted as follows "with onset of jaundice" sixteen times, on the first day of jaundice three times, second day four times, third day three times and "suddenly realized" toward the end of the first week of jaundice three times. Five patients apparently noted onset of relief from one to fourteen days before they noted their jaundice. Their jaundice of course may have been visible but unnoticed, or they may in fact have had relief during the stage of subclinical jaundice. Complete relief of all rheumatic symptoms was experienced by 100 per cent of the fibrositic and by 63 per cent of the arthritic patients. The rest of the arthritic patients noted marked (grade 3) but not complete relief. A remission, not a "cure," is induced. Remissions have lasted from three weeks to three years and nine months. They averaged (roughly) from two to three times the average duration of the jaundice. Subsequently symptoms returned "as before" in 48 per cent, in much milder form in 39 per cent, of the cases. In a few, symptoms are still absent, two patients have died.

The responsible agent has not yet been identified. It may be a normal hepatic substance (bilirubin, bile salts, other substance), an abnormal hepatic substance such as liver autolysate or extra-hepatic substance. The mechanism whereby it acts has not yet been determined. The therapeutic implications are obvious. An intensive study of the phenomenon may lead to a better understanding of the pathogenesis of these diseases, perhaps even to some superior method of controlling them by giving the patients repeated remissions, from the use of some nontoxic accompaniment of jaundice effective in available concentration. Various methods to reproduce the phenomenon have been used, so far unsuccessfully, bile salts by mouth, synthetic bile salts (decholin) orally and intravenously, the administration of diluted ox bile by proctoclysis and of large amounts of human bile by stomach tube (up to 7,650 cc in ten days, 2,600 cc in one day), and transfusions of highly jaundiced blood. To study the phenomenon more effectively, it seemed justifiable to produce a relatively harmless type of 'experimental jaundice'. A discouraged, incapacitated, arthritic patient volunteered to accept such a measure. "Toluyene diamine jaundice" was produced, the first example of experimental jaundice in a human being. Unfortunately the (hemolytic) jaundice induced thereby did not induce remission.

Some more feasible method of study is needed, a method perhaps adaptable to the field of therapy. But when it is obtained it must be regarded not as an end in itself but as a means to an end. "Therapeutic jaundice" is an attractive term, but even if what it implies can be successfully accomplished it should at best be considered a crude, temporary form of treatment. Two conclusions are permitted now. 1 Chronic infectious (atrophic) arthritis and primary fibrositis obviously are not necessarily relentless, uncontrollable diseases for which no really satisfactory and rapid method of control need ever be expected, certain of their pathologic changes may be permanent but their pathologic physiology is much more reversible than supposed, indeed it is dramatically and rapidly reversible. 2 Nature does possess a highly effective (if rarely utilized) method of producing a dramatic remission, involving a phenomenon precipitated more rapidly and more effectively by jaundice than by any other physiologic change or therapeutic method. The next step belongs to us. It behooves us to discover nature's dramatic if accidental antidote.

Experimentally Induced Jaundice (Hyperbilirubinemia)

DRS HARRY E THOMPSON and BERNARD L WYATT, Tucson, ARIZ. Bile contains four main components (1) bile pigments, (2) bile salts, (3) lipidol constituents and (4) mucin. It has been generally observed that out of this group bile pigments alone reach relatively higher levels in the circulation in jaundice of the hemolytic type, while both bilirubin and bile salt are increased in jaundice of the obstructive and toxic type. Although the majority of cases in the literature indicate that those jaundices in which the most beneficial effect on arthritis was noted were accompanied by a rise in the serum bilirubin and bile salt, these two substances cannot be considered entirely responsible, since remissions have been observed to follow jaundice (hemolytic) in which the bile salt level presumably was not raised.

The effect of single and repeated intravenous injections of bilirubin at various dosage levels in rabbits has been observed. The results may be briefly summarized as follows. 1 Bilirubin was rapidly excreted following single intravenous injections. 2 Repeated injections of 20 mg per kilogram of bilirubin for ten days produced a chronic bilirubinemia and a retention in the tissue of the pigment. 3 No toxic effects were noted during administration or at autopsy. 4 The single fatal dose of bilirubin was from 175 to 200 mg per kilogram. The observations indicate that the excretion of bilirubin was not even with repeated doses but that the tissue took up sufficient pigment so that a slight bilirubinemia persisted.

Three patients with chronic atrophic arthritis were given a series of repeated injections of bilirubin in 10 to 15 mg per kilogram doses daily. Observations on these patients demonstrated that bilirubin is rapidly but not completely excreted from the blood following repeated injections. These patients developed a slight hyperbilirubinemia and sufficient retention in the tissue to produce an icterus. Little or no symptomatic improvement was noted in this group.

The administration of bile salt alone (sodium dehydrocholate) was tried in ten patients with chronic atrophic arthritis. They were given intravenously 2 Gm of the salt daily for from nine to twelve days. Little or no symptomatic improvement was noted. The animal experiments were repeated, bilirubin being used at 20 mg per kilogram and the sodium salt of dehydrocholate at 40 mg per kilogram doses. This bile salt was selected as it is apparently less toxic intravenously than some other bile salts. In addition to the previous observations the functional capacity of the liver (bromsulfalein) was studied. A brief summary of this study is as follows. 1 In single doses the clearance of bilirubin was essentially the same with bile salt as with bilirubin used alone. 2 With repeated administration there appeared a slightly greater pigment retention in the blood and tissues when bile salt was added to the bilirubin. 3 No evidence of toxicity appeared during or after administration or at autopsy. A patient having a chronic nonspecific atrophic arthritis was selected. He was given daily doses of 10 mg per kilogram of bilirubin intravenously for four days, and on the fifth, sixth and seventh days 40 mg per kilogram of sodium dehydrocholate was added to the infusion. After four injections of bilirubin a slight icterus developed but no relief of symptoms was noted, both knees and one ankle remained warm, swollen and painful. However, within eight hours following the fifth infusion (bilirubin and bile salt) definite relief from pain in all involved joints appeared. The swollen joints had diminished slightly in size and he was more icteric. The serum bilirubin twenty-four hours after this infusion was 281 mg per hundred cubic centimeters. The Van den Bergh reaction was indirect. Following the two succeeding injections the joint swelling rapidly diminished and the analgesia has persisted up to the present time (five months). This reversal of symptoms came on so dramatically and suddenly that one immediately notes the similarity between this case and the reported cases of analgesia occurring clinically with jaundice.

The bilirubin and bile salt were then employed in nine other patients with chronic atrophic arthritis. Briefly, the observations are as follows. Of ten patients, three received seven to eight three nine, one ten and one eleven daily infusions of bilirubin and bile salt. The first observable icterus in the eyes was noted after the first to fourth injection. This became generalized after from two to eight injections. However, there were varying degrees of intensity noted, as a general rule the icterus became progressively more marked with each succeeding injection. The observable jaundice disappeared in from fourteen to twenty-three days after the last administration. Diminished swelling was noted after from one to nine infusions. Analgesia was noted after from one to seven injections and persisted for varying intervals, the shortest period being twelve days. The longest period cannot be determined, as five patients have had no return of pain up to the present time (eleven to one month and one month). Reactions occurred in from one to thirty-five infusions, fifteen reactions appeared in six patients. All general reactions were of short duration and never appeared dangerous.

Neither bilirubin nor bile salt alone has an analgesic effect, the mechanism of their combined action is somewhat problematic. The first question that presented itself was: Is there a higher and more persistent hyperbilirubinemia when bilirubin and bile salt were used together than when bilirubin was used alone? The observation on the patients and on rabbits indicate that there is a slightly higher and more persistent hyperbilirubinemia when the two are used together than when bilirubin is used alone. However, the differences are not striking and the chemical relief of symptoms has not been sufficiently parallel to the degree of bilirubinemia to allow any conclusions. It was found that the administration of bile salt was without beneficial effect on the symptoms of chronic atrophic arthritis. Bilirubin employed alone similarly did not give any beneficial effects. However, the combination of bilirubin and bile salt had an ameliorating effect on the symptoms of atrophic arthritis. The mechanism of this action is not obvious, but it seems clear from these studies that one can produce an artificial jaundice which apparently duplicates the effects reported by various workers when clinical jaundice intervenes in patients with atrophic arthritis.

DISCUSSION

DR. NATHAN SIDEL, Boston: Since our original report was published in 1934, I have seen four other patients who showed the analgesic effect of jaundice on their arthritic pain. Two of these patients had obstructive jaundice due to carcinoma of the head of the pancreas, the joint condition was osteoarthritis but there was only slight improvement. The other two patients presented rheumatoid arthritis, and with the onset of catarrhal jaundice the joint pain was alleviated. My first experience with bile salt therapy in arthritis was the giving of bile salts by mouth to the first patient in our jaundice series after his jaundice cleared. This occurred in 1933 and whereas the patient previously had to take from eight to ten acetylsalicylic acid tablets daily for relief, he felt better with the bile salts and has continued this program to date. However, this therapy was not successful in other patients. In 1934 I tried dehydrochloric acid (decholin) intravenously in ten arthritic patients but there was no relief. This is consistent with the work of Dr. Thompson that dehydrochloric acid by itself was of no value. I hope that commercial houses will not exploit bile salts for arthritis in view of the jaundice analgesia. I look on jaundice as a temporary palliative but not as a cure for arthritis. Is it possible that there is a certain liver substance, call it *x* if you will, that may be helpful when the patient takes cinchophen without getting toxic effects but is excreted in excess if jaundice occurs and thus gives such marked relief to patients with arthritis?

DR. WILLIAM B. RAWLS, New York: During the past five years the clinic with which I am affiliated has been studying the liver function of patients with rheumatoid arthritis. Dr. Hench's report published in July 1933, pointing out the relief of arthritic pain during jaundice, suggested to us that it might be related to liver dysfunction. Although one of our patients had had relief from pain during jaundice, we had not considered a possible relationship until Dr. Hench's first report appeared. In another investigation, which included giving cinchophen as a clinical test to determine the reliability of skin tests with cinchophen, nine of the patients developed urticaria. In five of them there was almost complete cessation of pain lasting from ten days in one case to six months in another. This occurred in cases in which the urticaria was severe and lasted for more than five days. As a rule, when the urticaria was mild, either there was no relief from pain or the relief was only temporary. The galactose tolerance, hippuric acid azorubin S, bilirubin excretion, icterus index, Van den Bergh reaction, cholesterol esters, total cholesterol and albumin-globulin ratio determinations were done in most cases, sometimes before and after the administration of cinchophen. When there was relief from arthritic symptoms, the icterus index, blood bilirubin and the proportion of cholesterol esters to total cholesterol were increased. Cinchophen toxicity occurred in forty-eight patients including nine with urticaria. In fifteen of them the icterus index was determined before cinchophen was administered and again after cinchophen toxicity developed. It was increased

3 points in six patients and from 5 to 7 points in four other patients. When the icterus index remained below 10 there was no relief from symptoms or the relief was only slight and temporary. When the index was above 10, symptomatic relief was usually more marked and more lasting. Those patients with an icterus index above 10 were considered subicteric. We decided to test the accuracy of icterus index determinations. Repeated readings on a number of specimens indicated a mean technical error of 0.7. The icterus index showed a mean variation of 1.8 from day to day when taken under similar conditions. This indicated that variations of 2 or more points, such as those just mentioned, were significant. In one case in which mild jaundice developed, for two weeks there was almost complete cessation of symptoms but they returned ten days after the disappearance of jaundice. In two other cases of mild jaundice there was complete cessation of symptoms, lasting for a period of about one month. In two instances the arthritic symptoms were worse even though the icterus index was increased to 10 and 12. Our failure to obtain a cessation of symptoms as long as was obtained by Drs. Hench and Thompson is probably due to the milder degree of jaundice. As Dr. Hench has pointed out, it seems to be a quantitative rather than a qualitative action. In a number of cases there was a definite decrease in the ratio of cholesterol esters to total cholesterol after cinchophen toxicity developed. In one instance the esters were 64 per cent of the total cholesterol before administration of cinchophen and 40 per cent after symptoms of toxicity developed. The icterus index increased from 5.4 to 8.7. There was relief of symptoms for ten days. Believing that increased serum bilirubin might be a factor in these cases, we gave a number of patients intravenous injections of bilirubin, without appreciable effect on the joint symptoms. Since hearing Dr. Thompson's paper, I am convinced that this was due to insufficient dosage because our dose never exceeded 3 mg. per kilogram of body weight. This dose gives only a slight increase in the serum bilirubin after four hours. Our experience with bilirubin has been rather limited, owing to the high cost of the drug. Further study is needed to determine whether increased bilirubin is responsible for the relief of pain in these patients. We have also used the sodium salt of dehydrocholic acid in a large number of patients. Ten cc. of 20 per cent solution was given intravenously from two to three times each week for from four to six weeks, or until they had received eight or ten injections. Although improvement seemed to occur in some cases, it should be used only for the liver dysfunction and not as a treatment for arthritis. Its action is probably due to the increased production of the bile, which relieves some of the toxicity present. These observations suggest that the relation between jaundice and the relief of arthritic pain should receive further study.

DR. H. M. MARGOLIS, Pittsburgh: In view of the fact that the occurrence of a significant degree of jaundice, from any cause, frequently inactivates completely an arthritic process for the period of duration of the icterus, we studied the therapeutic effect of certain components of the icteric state in cases of active rheumatoid arthritis. Because it was most easily available we studied first the effect of sodium dehydrocholate, a salt of one of the bile acids, which was injected intravenously, daily, over a period of a week. We employed this procedure in several patients with rheumatoid arthritis in whom the chief disability was caused by pain, periarthritic swelling, stiffness and soreness. Although, in one case, the effect during the first few days seemed encouraging, it was soon evident that improvement was merely coincidental, for the subsequent experience was quite different, and I found no appreciable benefit from the administration of the salts of bile acids. The results were so clear cut that further therapeutic trial of bile salts in arthritis was not attempted. In view of the possibility that the relation of jaundice to improvement in the arthritic state may depend on some product of hepatic degeneration we studied the effect of the intravenous and intramuscular injection of autolyzed liver which was kindly supplied me by Dr. W. S. McEllroy of the University of Pittsburgh. This preparation, which Dr. McEllroy has employed in the treatment of pernicious anemia, is made by adding a dilute solution of hydrochloric acid to minced beef liver to which small amounts of chloroform are also added as a preservative, the mixture being shaken, placed

in an incubator and allowed to undergo autolysis for an average period of ten days, during which time it is shaken daily. At the end of ten days the undigested material is removed by filtration and this filtrate was used after adjusting the reaction to neutrality and sterilizing it by Berkefeld filtration. Since this preparation contains various protein degradation products, which are apt to produce severe reactions, the material was diluted in physiologic solution of sodium chloride or 5 per cent dextrose solution. The intravenous injection of such an autolyzed liver solution in two cases of atrophic arthritis produced distinct exacerbation of the symptoms of pain, stiffness and soreness. During the course of a series of injections that were given, improvement did not occur, but rather an exacerbation of all symptoms. The adverse effect was so clearly evident that this procedure also was discarded. During all this time I felt that the relief of arthritic pain afforded by the icteric state is probably effected not by any one single chemical factor but probably by some combination of factors inherent in the jaundiced state. I am glad to find that Dr. Thompson's and Dr. Wyatt's observations, just reported, confirm this view to a large extent. To study the toxicity of whole bile, Dr. McEllroy and I injected intravenously into a dog a preparation of ox bile. Toxic manifestations resulted immediately, with nausea and vomiting and, later, evidence of cerebral confusion and motor incoordination, from which the dog recovered, however, within twenty-four hours. This reaction was so marked that we did not feel justified in repeating this experiment clinically, particularly since it was evident that such large amounts of whole bile would be required that it would be distinctly hazardous. That is as far as our experiments have gone, but we are still intensely interested in the problem of devising some means of duplicating that biologic state which, in spontaneous jaundice, produces these frequently remarkable clinical remissions in the arthritic patient. The report of Drs. Thompson and Wyatt points the way to further study along this line—studies which may give some clue to certain biochemical factors capable of influencing the arthritic state favorably. I can testify to one other point brought out by Dr. Hench that the effect of jaundice is somehow selective for rheumatoid arthritis and is apparently ineffective in gout. This was observed in one of my gouty patients recently in whom an acute exacerbation of gouty arthritis was preceded by an acute hepatitis with jaundice. The gouty arthritis in this case appeared, in fact, during the course of the icterus.

DR. PHILIP S. HENCH, Rochester, Minn. The authors have demonstrated a method for successfully producing an apparently harmless "jaundice" or hyperbilirubinemia, which should be of value in studying a number of physiologic and clinical problems other than ours. Their study leads to the conclusion that there is some potent reaction between bilirubin and bile salts which is responsible for the phenomenon. I have been unwilling to stress the importance of bilirubin for various reasons. Among other phenomena pregnancy, which would seem to have little or nothing to do with bilirubin, often provokes a similarly effective if less dramatic remission in atrophic arthritis. If my four patients who told me that their relief came before the visible jaundice were correct, either bilirubin is not responsible or small amounts are effective, an idea contradicted by certain data. It is of course possible that the four patients had an unrecognized visible jaundice, but if they did not have, or even if they had, a subclinical jaundice, it would suggest that significant excesses of bilirubin are not required. When his results were consistent enough and the details of his technique were ironed out, Dr. Thompson, about two months ago, gave me his preliminary plan in order that I might have some experience with it to bring to this discussion. Dr. Thompson has described his technique in five sentences and the method sounds simple enough. But to me it is not as simple as it sounds. Dr. Thompson warned me that we might have difficulties at first and we have had them. First, the strong alkali continues to irritate, or cause thrombosis in our patient's veins so that the matter of giving from eight to twelve consecutive injections to the average thin, hyposthenic arthritic patient becomes a problem. According to Dr. Thompson the solution must be made fresh daily (a matter of about two hours' work), administered promptly, and kept away from sunlight at all times to prevent oxidation of bilirubin. It remains to be proved how necessary

some of these precautions are. In the eight weeks at my disposal I have been able to treat only six patients, all with active atrophic arthritis. One became jaundiced and had peaks of serum bilirubin, between 15 and 29 mg, but although he received seventeen injections (some of them in 1 Gm.) he noted no relief. One received twelve injections, became definitely jaundiced, had several peaks of serum bilirubin between 10 and 26 mg, and noted only partial relief—about 50 per cent for a few days. Unfortunately venous thrombosis developed and we could not give him more injections. In an attempt to avoid these reactions we buffered the solution, bringing it almost to neutrality, but two patients treated with a solution had excretion curves totally different from the others. Neutralization made the solution impotent to produce relative hyperbilirubinemia after six injections. Our last two patients have received daily doses of 1 Gm of bilirubin and 4 Gm of dehydrochloric acid to saturate them as fast as possible. They have received eleven and thirteen daily injections to date, both are decidedly jaundiced, with peaks of 24 and 34 mg of serum bilirubin and low points of 7.9 and 12.5 mg. Yet neither has yet noted any analgesia. After a few more injections, both patients experienced considerable relief from pain. One who had hydrops and fever has noted no change in these features either. Thus, ironically, I am so far from able to corroborate Dr. Thompson's findings which I should like to do, since they so amply corroborated and extend my own observations on spontaneous jaundice. In going over my records carefully with him yesterday I found two or three little differences which may be important. For example, we added bile salts before, rather than after, filtration. Nevertheless, we must conclude that the procedure is an empirical, not a rationalized, one. It is not simply a question of dissolving a certain amount of bilirubin in any alkali, adding bile salts and administering the mixture. The hypothetical τ substance may be in, or be engendered by, his solution but not by ours, although we have been using the same preparation of bilirubin and bile salts (decholin). Is the τ substance really dependent on the bilirubin-decholin mixture or is it dependent on something else in his solution? Commercial bilirubin solutions are not yet really pure. There are impurities in the bilirubin both of us have been using. Pure bilirubin contains 8.95 per cent of nitrogen, commercial bilirubin contains from 7.2 to 8.3 per cent nitrogen. Whether this is a factor, whether oxidation is to be avoided or actually welcomed, these and other details are to be worked out. I am not discouraged by these preliminary differences in results. Indeed, they may help us solve the problem. In the meantime they emphasize what was said before. Dr. Thompson is not presenting us with "therapeutic jaundice" but when his method is standardized and rationalized it may help us to realize to the fullest the therapeutic implications implied in the phenomenon which has been observed to occur with spontaneous jaundice.

DR. HARRY E. THOMPSON, Tucson, Ariz. Dr. Sidel's results with bile salt given alone is similar to ours when we used bile salt alone. Dr. Rawls has used bilirubin alone but has given it in only 3 mg per kilogram doses and did not employ it in conjunction with bile salt. With regard to Dr. Hench's discussion, when we went over this procedure previous to this meeting it was quite evident that he had not followed the exact procedure which I had given him a few months previously. He had made several changes. Both he and I agree that although these are minor changes they are perhaps major in importance. Thus I am sure accounts for differences in our results. In an effort to confirm our work he has mentioned that one patient was 50 per cent improved. This indicates to me that despite the changes made in the procedure he was sufficiently close at this time to approximate in part our results. I think that closer adherence to the procedure—both the preparation and the administration—will result in comparable clinical results. That a nontoxic jaundice can be produced is apparent as Dr. Hench has confirmed our work with relation to its production. Dr. Hench is to be congratulated for his keen observation that a jaundice intervening clinically may produce a remission in atrophic arthritis. I thoroughly agree that bilirubin and bile salt should be kept free from exploitation. To exploit such substances, promising as they may appear to be, is undesirable and unwarranted at this time.

Current Medical Literature

AMERICAN

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Carcinoma of the Cervix Report of 186 Cases J D Peake Mobile—p 113

Hyperthyroidism Importance of Early Recognition and Treatment J M Wilson Mobile—p 116

Uterodural Anastomosis in Hydrocephalus W R Meeker and J O Muscat Mobile—p 119

American Heart Journal, St Louis

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Clinical Study of Preparation of Squill (Urginum) in Treatment of Myocardial Insufficiency F L Chamberlain and R L Levy New York—p 268

Effect of Theophylline with Ethylenediamine (Aminophylline) on Course of Cardiac Infarction Following Experimental Coronary Occlusion H Gold Janet Travell and W Modell New York—p 284

Significance of an Absent or a Small Initial Positive Deflection in Pre-cordial Lead A M Master S Dack H H Kalter and H L Jaffe New York—p 297

*Some Effects of Alteration of Posture on Arterial Blood Pressure H Wald M Guernsey and F H Scott Minneapolis—p 319

*Analysis of Diagnostic Criteria of Angina Pectoris Critical Study of 100 Proved Cases J E F Riseman and M G Brown Boston—p 331

Unusual Clinical Manifestations of Subacute Bacterial Endocarditis A Grossman and A Lieberman New York—p 352

Subacute Bacterial Endocarditis Clinicopathologic Study of Thirty Seven Cases J R Brink and H L Smith Rochester Minn—p 362

Occurrence of an Upright T Wave in Lead IV in a Patient Without Other Evidence of Heart Disease W A Sodeman New Orleans—p 367

Effects of Posture on Blood Pressure—Wald and his associates determined the immediate (during the first minute) and the prolonged effect (after the first minute) on the arterial blood pressure in human subjects after the change from a recumbent to an upright position. Experiments on animals trying to determine the mechanisms of adjustments were also performed. On changing from the recumbent to the standing position the systolic pressure is from 5 to 40 mm of mercury below the recumbent level about ten seconds after the change. There is a rapid recovery after this initial drop and after about thirty seconds many subjects have regained or passed the recumbent level. In some few cases the recovery is slower. Diastolic pressure usually rises slightly on standing. The same type of reaction is seen when the subjects are tilted into the vertical posture, but the drop is greater and the recovery less. Prolonged quiet standing is a severe strain on the circulation, as shown by the frequency of fainting. Reflexes from the carotid sinuses and arch of the aorta are responsible (in part at least) for the reactions leading to the recovery of the pressure.

Diagnostic Criteria of Angina Pectoris—To establish the criteria for the diagnosis of angina pectoris and to determine the frequency of atypical forms of the syndrome, Riseman and Brown made a careful investigation in 207 patients suspected of having angina pectoris. The study included the clinical history, physical examination, electrocardiographic tracings, teleroentgenograms of the heart, the basal metabolic rate, the blood serum cholesterol and the patient's reaction to exercise under standardized conditions. The five characteristics of importance in the diagnosis of angina pectoris were that the attacks were sudden in onset, short in duration involved the anterior part of the chest and inner aspect of the arms were induced by exertion in the cold and consisted of a vague indescribable

sensation of unrest or distress. Patients who lacked one or more of these features proved to have either no cardiac disorder as the cause of their symptoms or to have angina pectoris plus some complicating disease. Other characteristics encountered frequently but having no specific diagnostic value included abnormalities in the electrocardiogram, blood pressure, size of the heart, basal metabolic rate, serum cholesterol level and relief by glyceryl trinitrate. Of the patients with angina pectoris 26 per cent showed no abnormalities in the electrocardiogram, blood pressure or size of heart by x-ray examination. Angina pectoris due to valvular heart disease, paroxysmal rapid heart action, anemia or thyrotoxicosis was quite similar to that secondary to coronary artery disease, but the attacks were likely to be prolonged and frequently occurred without obvious precipitating cause. Difficulties in diagnosis were usually due to noncardiac disease simulating angina pectoris or angina pectoris simulating or occurring together with a noncardiac disease. Observation of the patient's reaction to exercise was frequently of distinct value in establishing the diagnosis or obtaining a more exact picture of the symptoms than was possible from the clinical history alone.

American Journal of Medical Sciences, Philadelphia

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*Congo Red in Treatment of Pernicious Anemia and Sprue W H Barker New York—p 293

Effect of Lead Therapy on Blood Cells of Cancer Patients S E Gould H J Kullman and H A Sackett Detroit—p 304

Acute Hemolytic Anemia (Lederer Type) A S Giordano South Bend Ind and L L Blum Terre Haute Ind—p 311

*Skin Irritation and Cancer in the United States Navy S Peller Baltimore and C S Stephenson Washington D C—p 326

Treatment of Hematemesis and Melena by Continuous Aluminum Hydroxide Drip Report of Twenty One Cases E C Woldman Cleveland—p 333

Tubercle Bacilli in Gastric Contents Important Diagnostic and Prognostic Finding R H Stuehm Madison Wis—p 340

Protamine Insulin and Infection H E Hummich and J F Fazekas Albany N Y—p 345

Arterial Hypertension Site and Significance of High Chloride Content of Blood F L Apperly and M Katharine Cary Richmond Va—p 352

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Maintenance of Functional Integrity of Occluded Large Arteries as Demonstrated by Thorotrast Arteriography W M Yater Washington D C—p 372

Respiratory Basis of Periodic Subcostal Pain in Children I A Kugel mass New York—p 376

Anemia of Myxedema Its Classification and Treatment J C Sharpe Omaha—p 382

Sedimentation Rate in Angina Pectoris and Coronary Thrombosis J E F Riseman and M G Brown Boston—p 392

Fractionation Studies on Intrinsic Factor in Normal Human Gastric Juice O M Helmer and P J Fouts Indianapolis—p 399

Treatment of Myasthenia Gravis Report of Six Cases M W Thorner and J C Yaskin Philadelphia—p 411

Congo Red in Treatment of Pernicious Anemia and Sprue—Because of the difficulty in obtaining suitable cases of pernicious anemia in relapse, the problem was at first attacked from a somewhat different angle. Barker selected from the outpatient clinic proved cases of pernicious anemia which were in a remission as the result of liver extract therapy. Weekly intravenous injections of congo red (Grübler) solution were substituted for intramuscular injections of liver extract. A 0.5 per cent solution of the dye in 0.5 per cent saline solution prepared exactly according to the method of Massa and Zolczky was employed in all cases. Only patients without evidence of combined systemic disease were selected. Six such patients were treated with congo red for periods varying from nine weeks to six months. Five of the six patients evinced a marked tendency to relapse, as shown by a falling erythrocyte count and hemoglobin as well as by the rising mean corpuscular volume and color index. In four, distinct symptoms of relapsing pernicious anemia appeared concomitant with the characteristic changes of the blood. The symptoms disappeared rapidly and the blood levels soon returned to normal when intramuscular liver extract therapy was resumed. These relapses during therapy with congo red are the more significant in that no attempt was made to control the diets of these patients who had been previously trained to eat plenty of meat and other foods rich in Castle's

extrinsic factor The conclusion is justified that weekly injections of congo red did not furnish a practical substitute for liver extract in this group of patients, all of whom could be maintained in a complete remission by a single injection of liver extract once every two to three weeks It was also ineffective in cases of pernicious anemia in relapse and sprue The dye may occasionally produce slight nonspecific reticulocyte rises in cases of pernicious anemia

Cutaneous Irritation and Cancer—Among 100,000 active males—officers and men—Peller and Stephenson find that there occurred annually 89 ± 1 new cases of cancer of the skin or lip (actually seventy-eight cases), and there were 125 ± 0.39 deaths from each of these two types of cancer The mortality figure contains all cases with an onset of the illness during the active service of eight years (from 1929 to 1936) The peculiar conditions of life in the United States Navy—the prolonged exposure to the sun's rays, to open air and to salt water—are associated with a frequency of cancer of the lip and skin eight times the normal and a greatly diminished morbidity and mortality from all other cancers In about four tenths of the men who would be expected to die from an inner malignant manifestation there developed instead of this cancer a curable tumor of the lip and skin The mortality from cancer of the skin and lip is in the United States Navy about three times higher than in the average population (of the same age [16 to 50] group) Among the fatal cases, melanoma predominates The danger from epitheliomas is small It seems that a tumor in the inner organs develops later in only a small part of the patients in whom cancer of the lip and skin has been cured This problem must be studied on a larger scale By exposing young men to strong cutaneous irritations which are not carcinogenous to the inner organs, the lives of some who would die from a cancer might be saved, at least for a certain number of years

American Journal of Public Health, New York

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- Rabies Deaths in Alabama Analysis of Case Histories with Regard to Treatment G A Denison Birmingham, Ala J G McAlpine and D G Gill Montgomery, Ala—p 869
- Nursing Services for Mothers and Children as Part of a Balanced Public Health Nursing Program Hortense Hilbert, Washington, D C—p 875
- Asphyxiation and Death in Oxygen Deficient Air E J Powers Buffalo—p 880
- Rat Surveys and Rat Proofing B E Holsendorf Rosebank Staten Island, N Y—p 883
- Occurrence of O and H Agglutinins Following Subcutaneous and Oral Administration of Typhoid Vaccine Cora M Downs and G C Bond, Lawrence Kan—p 889
- *Tapeworm Infestations in Southern United States E J Sunkes and T F Sellers, Atlanta, Ga—p 893
- Influence of Dead Bacteria on Microscopic Counts of Pasteurized Milk A R Ward and C E Myers Detroit—p 899
- Veneral Disease Program for State or Full Time Health Departments O C Wenger, Washington D C—p 906
- School Nursing in a Generalized Nursing Program Grace Ross, Detroit—p 909
- Influence of Contaminating Bacteria on Results of Microscopic Test for Streptococcal Mastitis C S Bryan and E A Nelson East Lansing Mich—p 914

Tapeworm Infestations in Southern United States—Sunkes and Sellers base their report on 927,625 fecal examinations performed in thirteen Southern states There were 8,085 positive observations, making a mean incidence of 0.87 per cent The incidence in the individual states ranged from 0.29 per cent in Florida to 2.97 per cent in Tennessee Of the 7,249 positive examinations that could be classified, 98.6 per cent were the dwarf tapeworm (*Hymenolepis nana*), an average incidence of 1.1 per cent Only 100 other types of tapeworms were found in this survey, of which fifty-eight were beef tapeworm (*Taenia saginata*), thirty-two rat tapeworm (*Hymenolepis diminuta*), eight pork tapeworm (*Taenia solium*) and one each fish tapeworm (*Diphyllobothrium latum*) and dog tapeworm (*Dipylidium caninum*) Histories are given of cases of human infestation with the fish tapeworm, the rat tapeworm and the dog tapeworm Data regarding the prevalence of human infestations with tapeworm are incomplete, owing to the failure of a number of laboratories of the state board of health to classify their observations

Annals of Medical History, New York

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- Letters of Dr Theodore Turquet De Mayenne to the Secretary of the Executive Council of the Republic of Geneva T Gibson, Kent Ont—p 401
- Description of Vermiform Appendix from the "De Fabrica" of Vesalius S W Lambert, New York—p 422
- Jean Dominique Larrey A Great Military Surgeon. P E Feltz, New York—p 428
- The Doctors Gustavus Brown Father and Son of Charles Combs J T Howard, Baltimore—p 437
- Nathan Smith and Early American Medical Education L D Anthon, Meriden, Conn—p 449
- Notes on the Medical History of Vienna H M Koras Iowa—p 464
- The Doctor on the Stage Medicine and Medical Men in Seventeenth Century English Drama H Silvette, University Va—p 492

Archives of Dermatology and Syphilology, Chicago

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- *Cutaneous Papillomatosis Papillomatose Confluente et Reticulée F Wise, New York and W Sachs Jersey City, N J—p 475
- Diagnostic Value of Intradermal Chancroidal Test R B Green and E S Sanderson Augusta Ga—p 486
- Relationship of Urticarial to Inflammatory Reaction to Trichophyton P V Marcussen Copenhagen Denmark—p 494
- Pathogenesis of Noncaseating Tuberculosis of the Skin and Lymph Glands R R Mellon and L G Beinbauer, Pittsburgh—p 510
- White Pinta or Vitiligo in Yucatan H Fox New York—p 534
- Necrobiosis Lipoidica Diabeticorum (Urbach and Oppenheim) J M Hitch, University, Va—p 536
- Sodium Amytal as an Aid to Psychotherapy in Case of Dementia Factitia L M Eaton and P A O Leary Rochester Minn—p 541
- Trichophytin and Allergy to Trichophytin II Observations on Variability of Cutaneous Responses to Trichophytin G M Lewis, M B Sulzberger and F Wise with assistance of Mary E Hopper New York—p 548
- Histologic Characteristics of So Called Precancerous Processes of Skin L Szodoray, Budapest Hungary—p 552
- Mapharsen in Treatment of Syphilis H N Cole Cleveland and P B Palmer, Lincoln Neb—p 561
- Subsurface Growth of Pathogenic Fungi on Peptone Hair Pigment and Cysteine Cystine Mediums J W Williams Cambridge Mass—p 581
- *Benign Hepatitis of Early Syphilis J R Waugh, Norfolk, Va—p 599
- Effect of Age on Consumption of Oxygen and Composition of Skin of Albino Rat P D Adams Cincinnati—p 606

Cutaneous Papillomatosis—The patient whose condition Wise and Sachs discuss exhibited an eruption characterized by (1) the morphologic features of individual lesions, (2) the configuration of the eruption, (3) the site of the initial manifestations and the areas of predilection, (4) the distribution of the individual lesions and (5) the concomitant manifestations (involvement of the axillae and groins) The elementary lesion consists of a papillomatous papule from 1 to 2 mm in diameter, it is slightly elevated, round, flat topped and bright red the surface is slightly cornified, and the borders are sharply defined. In the course of development a rapid change takes place. The red papule becomes gray, and as a result of deposit of pigment soon turns brown, the epidermis is thickened, uneven and somewhat cornified, some of the lesions are almost verrucous resembling plane juvenile warts The papules increase in size attaining a diameter of from 4 to 5 mm Further progress of the eruption results in confluence of the lesions in the form of a massed flat network with well defined borders On the intermammary and epigastric regions the eruption resembles pityriasis versicolor As the papules increase in number they gradually merge and form a centrally situated (intermammary) diffuse, even surface, while those at the periphery spread out and form a network, which diminishes and fades as it approaches the surrounding unaffected skin The earliest manifestations appear on the intermammary and epigastric regions From these areas the eruption spreads with diminishing intensity the involvement being upward toward the breasts and axillae downward toward the pubes and posteriorly up and down the spine Concomitant manifestations appear on the neck and about the axillae The skin of the neck is thickened and the surface markings are exaggerated, roughened and enlarged but papillomatous formations are lacking The skin of the axillae exhibits a pronounced exaggeration of its parallel folds the glandular orifices are prominent and enlarged and capped with fine cornified plugs The epidermis is grayish red or grayish brown and feels smooth to the palpating finger The eruption undergoes an insidious and chronic evolution new areas becoming involved at irregular intervals The eruption

It is neither congenital nor hereditary. It seems probable at endocrinologic disturbances, especially thyroid dysfunction, may play a part in the etiology. The American literature contains no reference to this group of dermatoses.

Benign Hepatitis of Early Syphilis—Waugh cites three undoubted cases of benign hepatitis of early syphilis and one probable one. Such cases are rare. Three of the patients had secondary syphilitic lesions of the skin or mucous membranes, and one had a primary lesion. Two of them showed a Herxheimer reaction when treatment was begun with neoarsphenamine. The jaundice in all four disappeared promptly under antisyphilitic treatment. These four instances occurred among 820 cases of recent syphilis (syphilis of one year's duration or less). The chief symptom of early acute benign hepatitis in syphilis is stated by Stokes to be jaundice and the chief sign enlargement of the liver. It is distinguished with difficulty from intercurrent catarrhal jaundice of nonsyphilitic origin and from hepatorecurrence. Differentiation must rest entirely on (1) the presence of a chancre or secondary eruption (usually roseola), (2) a Herxheimer reaction if treatment is begun with an arsphenamine preparation and (3) prompt cure, if treatment is continued. From two to five weeks should be sufficient for complete recovery of the patient with early hepatitis except when there is residual enlargement of the liver. Two patients, who were treated with neoarsphenamine and a bismuth compound, had Herxheimer reactions. The patient treated with bismuth alone and the patient who received preliminary intramuscular injections of mercuric benzoate before treatment with arsphenamine showed no clinically recognizable Herxheimer reactions. It is believed that there is no danger of trouble from a severe Herxheimer reaction if an arsphenamine preparation is used from the outset in the treatment of patients with benign hepatitis of early syphilis, provided treatment is instituted with small doses of the arsphenamine preparation and the patient is watched carefully.

Archives of Internal Medicine, Chicago

60 385 566 (Sept.) 1937

- *Clinical Course and Treatment of Sprue D. K. Miller and W. H. Barker New York—p. 385
- Acute Bismuth Poisoning with Recovery N. M. Keith and A. E. Osterberg Rochester, Minn.—p. 415
- Inheritance of Shaking Palsy W. Allan Charlotte N. C.—p. 424
- Pulsations of the Wall of the Chest II Pulsations Associated with Aortic Regurgitation W. Dressler Vienna Austria—p. 437
- Id. III Pulsations Associated with Tricuspid Regurgitation W. Dressler, Vienna Austria—p. 441
- Effects of Vitamin B₁ Concentrate J. K. Narat and J. A. Loef Chicago—p. 449
- *Traction Diverticulum of Esophagus Roentgenographic Demonstration Symptoms Noted in Series of Twenty Six Patients R. P. Wallace New York—p. 454
- Leukemia Without Leukocytosis (Aleukemic Myelosis) and Without Splenomegaly S. R. Mettler and Katherine Purviance San Francisco—p. 458
- Influence of Copper and Liver Fraction on Retention of Iron Adelaide P. Barer and W. M. Fowler, Iowa City—p. 474
- Diverticulum of Pericardium Further Data Showing Presence of Extra Thoracic Abscess E. H. Cushing and A. Moritz Cleveland—p. 482
- Calcification of Myocardium with Bone Formation Report of Case J. N. Cohen and H. S. Levine Brooklyn—p. 486
- *Therapeutic Value of Convalescent Serum in Scarlet Fever M. Fox and M. Hardgrove Milwaukee—p. 494
- Increased Urinary Excretion of Iodine in Hyperthyroidism G. M. Curtis and I. D. Puppel Columbus Ohio—p. 498
- Electrolytes of Blood and Urine of Dogs with Acute Hepatic Injury Produced by Arsphenamine L. J. Soffer D. A. Dantes and H. Sobothka New York—p. 509
- Peripheral Vascular Diseases Review of Some of Recent Literature and Critical Review of Surgical Treatment G. W. Scupham and G. de Takats Chicago—p. 522

Clinical Course and Treatment of Sprue—Miller and Barker studied a series of thirty-three patients with sprue. Twenty-nine of these patients have been followed in the clinic after discharge from the hospital. Ten patients presented the classic picture of severe sprue with diarrhea and anemia, nine patients had diarrhea but no anemia, while fourteen complained only of abdominal discomfort and flatulence. The symptomatology, the hematology and the results of gastric analyses for these patients have been presented in detail, together with illustrative cases. X-ray study of the small intestine was made for twenty-nine of these patients and morphologic alterations of the small intestine were observed in all, these changes varying directly with the severity of the disease. The most significant

abnormalities were a distortion of the mucosal pattern and a variation in the caliber of the intestinal loops. The great majority of the patients experienced complete symptomatic relief once adequate therapy had been instituted. Moreover, these patients have been maintained in excellent health over long periods by means of a relatively simple therapeutic regimen. Five patients have returned to tropical countries without recurrence of symptoms. No patient has discontinued specific therapy entirely without suffering a relapse. The maintenance of a diet for sprue in addition to liver extract therapy gives a patient more complete relief from gastro-intestinal symptoms than does liver extract alone. The frequency of injections of liver extract must be individualized; the prevention of intestinal dysfunction serving as a guide to the amount of therapy to be given.

Traction Diverticulum of Esophagus—Wallace points out that among the ten patients reported in 1932 and in sixteen additional patients in whom traction diverticulum of the esophagus was discovered roentgenographically symptoms recurred with such frequency as to cast doubt on the theory that symptoms are absent with this lesion. Symptoms were attributed to the diverticulum by ten patients; in eight they were the patient's chief complaint while in the remaining two cases esophageal symptoms were of secondary importance. Pain behind the sternum was felt by six patients. A sensation of weight or heaviness was complained of by four and burning by three, while sudden, sharp, short, sticking dull, constant, choking and constricting were the terms used once each to describe the discomfort. Occasionally food would increase the pain. The intensity of the pain varied from mild to severe and bore no relationship to the position of the body, respiration or the time of day. Usually the pain was referred to the midsternum. Dysphagia distinct from substernal pain, was experienced by six patients. Swallowing was not only difficult but painful. Hematemesis occurred in three cases and in two it was the only complaint. Other symptoms of minor importance and infrequent occurrence were eructations, simple vomiting, hiccups, pain high in the epigastrium and weakness.

Value of Convalescent Serum in Scarlet Fever—Fox and Hardgrove, in comparing the results obtained in 139 patients with scarlet fever treated with commercial antitoxin 589 treated with pooled human serum of patients convalescent from scarlet fever and 300 receiving neither but who were given the same general symptomatic treatment find that the most satisfactory results were obtained after the use of convalescent serum. When serum was given early in adequate doses, there was an apparent decrease in the mortality rate as well as a reduction in the complications. As a rule, all the symptoms improved, and there was a marked reduction in the length of time until the temperature reached normal. Serious untoward reactions following the use of human convalescent serum given either intramuscularly or intravenously, were not observed.

Archives of Ophthalmology, Chicago

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- Essential Progressive Atrophy of the Iris Report of Case H. S. McKeown New York—p. 347
- Prevention and Treatment of Keratitis Neuroparalytica by Closure of Lacrimal Canaliculi Report of Case J. A. MacMillan and W. Cone Montreal—p. 352
- Orbital Cyst Without Epithelial Lining Report of Two Cases of Blood Cyst J. M. Wheeler New York—p. 356
- Late Results of Extraction of Cataract E. Jackson Denver—p. 363
- *Rare Complication Following Appendectomy Report of Case in Fifty Four Year Old Man H. G. A. Gjessing Drammen Norway—p. 371
- Bacterial Factors in Chronic Catarrhal Conjunctivitis I. Role of Toxin Forming Staphylococci P. Thygeson New York—p. 373
- Formation of Drusen of Lamina Vitrea B. Rones Washington D. C.—p. 388
- Seasonal Variations in Lipid Content of Crystalline Lens P. W. Salit Iowa City—p. 403
- Abnormal Ocular and Pupillary Movements Following Oculomotor Paralysis Report of Case M. B. Bender New Haven Conn. and S. Albert New York—p. 411
- Some New Conceptions Regarding Egocentric Visual Localization H. L. Bair Rochester Minn.—p. 415
- Some Problems and Procedures in Refraction A. DeH. Prangen Rochester Minn.—p. 432

Amaurosis Following Appendectomy—Gjessing reports the occurrence of a case of cerebral apoplexy following an appendectomy in a man 54 years of age. The appendectomy was performed under narcosis induced with the customary

quantities of scopolamine hydrobromide, morphine and ether. During the operation the patient collapsed and became very cyanotic. After some moments, recovery occurred and the operation was continued, with the patient under the influence of an anesthetic administered by use of the open mask. When the patient awoke he was totally blind. The attending surgeon also noted paralysis of the right arm and leg. The patient was a heavy plethoric person and was restless and somewhat disoriented, so that examination was difficult. The grip of the right hand was weaker than that of the left. The other reflexes could not be examined satisfactorily. Ocular examination revealed complete ptosis of the left upper lid, the right being normal. Each eye was immobile, deviating a little toward the right but not drawn entirely to the canthus. Each pupil was round and moderately dilated and did not react to light. The media and fundi were normal. Total amaurosis was present. The patient became increasingly irrational and died during the second day following the operation. Permission for postmortem examination was not secured.

Canadian Public Health Journal, Toronto

28 363 414 (Aug) 1937

- The 1936 Epidemic of Poliomyelitis in Manitoba Control Measures F W Jackson, Winnipeg Manit—p 363
Id Epidemiologic Features C R Donovan, Winnipeg, Manit—p 368
Development of Sensitivity to Proteins of Corynebacterium Diphtheriae A E Allin D T Fraser and B Hannah Toronto—p 376
Mental Tests A J Brown Toronto—p 378
Kay and Graham's Phosphatase Test Applied to Ontario Milk M Doreen Smith Toronto—p 383
Smallpox Vaccination in Windsor Ont F Adams Windsor Ont—p 388
*Lead in Certain Colored Chalks and the Danger to Children C M Jephcott Toronto—p 391

Danger to Children of Lead in Colored Chalks—Jephcott analyzed the colored chalks of five manufacturers. It was noticed that chalks of certain colors, yellow, orange and green, contained in some cases relative large amounts of lead chromate. No lead was present in white, red, blue, brown and black chalk. Cleaning blackboards and brushes in school often performed by children, will be accompanied by the inhalation of lead dust when such chalks are used. It is likely that crayons should be viewed with the same suspicion. When it is realized that not more than 0.6 Gm of metallic lead has caused a fatal case of lead poisoning, it is evident that these chalks, if continuously nibbled by children, contain sufficient lead to cause plumbism.

Georgia Medical Association Journal, Atlanta

26 443 484 (Sept) 1937

- Obstruction in Higher Urinary Tract S A Kirkland Atlanta—p 443
Functional Disturbances of Gastro-Intestinal Tract W W Chrisman Macon—p 449
*Acute Hemorrhagic Nephritis in Children J Yampolsky Atlanta—p 452
Choice and Evaluation of Methods in Treatment of Hemorrhoids M C Pruitt Atlanta—p 458
Recent Developments in Socialization of Medicine W H Myers Savannah—p 462
Multiple Gliomas of the Brain Simulating Vascular Disease R B Wilson Atlanta—p 464
Treatment of the Heart in Hypertensive Disease E A Bancker Jr Atlanta—p 472

Acute Hemorrhagic Nephritis in Children—Yampolsky treated twenty-one patients with acute hemorrhagic or glomerular nephritis in young children at the Grady Hospital in the Negro children's ward. If the patients excreted urine without difficulty, a full diet was given. Edema was treated as follows: For a few days fluids were limited to from 500 to 600 cc daily. Magnesium sulfate was administered in doses of one-half ounce (15 Gm) every four hours until the stools became watery. Hypertonic liquids by mouth and enemas of hypertonic solution are useful. Magnesium sulfate may be given intramuscularly, from 1 to 2 cc of a 25 per cent solution for each 10 pounds (4.5 Kg) of body weight. Concentrated dextrose, 50 per cent solution, may be given intravenously. While dextrose may not have a diuretic effect, it aids materially in keeping up the patient's nutrition and also helps the blood volume. Dextrose probably aids in clearing the blood in the urine. Hypertension can best be improved by rest in bed, sedatives by mouth or intramuscularly, dextrose intravenously, and especially by the

administration of magnesium sulfate intramuscularly. If a patient has convulsions, treatment includes a tepid sponge bath, saline enema, magnesium sulfate, spinal puncture with 0.5 cc intramuscularly, one-half grain (0.032 Gm.) of sodium phenobarbital or sodium amytal and 8 cc of ether in 2 ounces (60 cc) of olive oil by rectum. Occasionally transfusions are of value. Diuretics apparently are of no great value. Focal infection should be removed. Of the twenty-one patients nine were discharged as well and nine as improved. Three died in the hospital. The author concurs with Boyle and Aldrich that the children who have recovered clinically from acute infectious hemorrhagic nephritis do not have subacute or latent nephritis.

Iowa State Medical Society Journal, Des Moines

27 451 510 (Sept.) 1937

- Prevention and Treatment of Severe Disturbances in Water and Electrolyte Balance A F Hartmann St Louis—p 451
Prevention and Treatment of Whooping Cough R P Noble Cedar Rapids—p 457
Diarrheas J C Parsons Des Moines—p 461
Gallbladder Diseases Extrahepatic Bile Tract E M MacEwen Iowa City—p 465
Id Concerning the Medical Aspect of Chronic Disease of the Gallbladder F M Smith Iowa City—p 470
Id X Ray Examination of the Gallbladder C L Gillette Iowa City—p 473
Id Surgery of the Biliary Tract Evaluation of Poor Results Based on Diagnostic and Technical Errors F R Peterson Iowa City—p 475
Erythroblastosis Fetalis A C Piercy Maxwell—p 480

Johns Hopkins Hospital Bulletin, Baltimore

61 151 220 (Sept) 1937

- Extracellular Fluid Extracellular Fluid and Its Vicissitudes J L Gamble Boston—p 151
Id Renal Defense of Extracellular Fluid Control of Acid Excretion and Factors of Water Expenditure J L Gamble Post—p 174
Some Observations on Intermedin D Lewis F C Lee and E B Astwood Baltimore—p 198
Simple Method for Analysis of Helium F F Schwenker and H K Fallon Baltimore—p 210
*Quinine as an Adjuvant to Prostigmin in Diagnosis of Myasthenia Gravis Preliminary Report A M Harvey and M R Whitehead Baltimore—p 216

Quinine as an Adjuvant to Prostigmin in Diagnosis of Myasthenia Gravis—In the course of some observations in relation to the antagonistic action of quinine to prostigmin, Harvey and Whitehead used the drug in establishing the diagnosis of myasthenia gravis in a case showing few objective signs. The increase in symptoms after the administration of quinine was promptly relieved by the injection of prostigmin, which had caused little noticeable change before the quinine was made prominent by the use of the antagonistic drug. That caution is necessary in giving quinine to patients with myasthenia gravis is indicated by the results in a second case, in which alarming symptoms appeared after the administration of 12 Gm of the drug, although 90 mg of prostigmin was given orally during the same period.

Journal of Urology, Baltimore

38 145 250 (Aug) 1937

- Some Phases of Renal Tuberculosis R M LeComte Washington D C—p 145
Solitary Cyst of Kidney with Adenocarcinoma in Walls of Cyst W J Erickson and L B Greene Philadelphia—p 153
Spontaneous Vesicovaginal Fistula in Unilateral Renal Tuberculosis W Healing A Ravich Brooklyn—p 160
Dermoid Cyst Ruptured into Urinary Bladder H E Shuk and G Y Char Peiping China—p 165
Inflammation of the Prostate Gland R A Moore New York—p 171
Xanthin Calculi Report of Case and Review of Literature H L Kretschmer Chicago—p 183
Instruments for Measurement and Radon Implantation of Urol Lesions T J Kirwin New York—p 194
Effect of Increased Intra Ureteral Pressure on Renal Function F Pilcher Jr J L Bollman and F C Mann Rochester Minn—p 198
Causative Agents and Protective Measures in Aniline Tumor of Bladder E E Evans Deepwater N J—p 212
Routine Cystoscopic Examination as Control Measure in Aniline Tumor of Bladder H D Wolfe Deepwater N J—p 216
Pathology of Aniline Tumor of Bladder D M Gay Wilmington Del—p 221
Treatment of Aniline Tumors of Urinary Bladder V D Williams Wilmington Del—p 232
Clinical Significance of Aniline Tumor of Bladder R S Ferguson New York—p 243

Kansas Medical Society Journal, Topeka

38 369 412 (Sept.) 1937

- Surgery of Large Bowel C F Dixon Rochester Minn—p 369
 *Food Allergy Concerning Diagnostic Problems and Procedures H J Rinkel Kansas City Mo—p 374
 Pneumococcal Meningitis with Complications Recovery with Continuous Spinal Drainage N Reider Topeka—p 380
 Use of Barbiturates in Surgery M A Walker Kansas City—p 382
 Modern Conceptions of Syphilis J G Misseldine and J V Van Cleve Wichita—p 383
 Dermatitis Medicamentosa R L Sutton Jr Kansas City Mo—p 385

Food Allergy—Rinkel discusses three aspects of food sensitization the frequency of food as an etiologic agent in the atopic syndromes and in clinical entities not yet classified as allergic diseases, the means by which one makes a diagnosis of food as a factor in these diseases and the nature of food sensitization as it affects clinical procedures. He states that food is practically always a factor in pollinosis it is the most common etiologic agent in perennial nasal allergy it is almost a universal factor in asthma and in this instance it is a more common cause of symptoms in the adult than in the child. Food allergy is variable in incidence and degree, it being very limited in certain patients while in others it is multiple and severe. It is the multiplicity of food sensitizations that determines chronicity, it is the degree of sensitivity that determines the severity of symptoms. The diagnosis of food allergy is a systematic study which neither assumes that allergy does not exist for a given food nor that food is not a factor in any clinical entity. It accepts as conclusive only those symptoms which can be reproduced at will by specific foods on purposeful ingestion. With this premise as a guide, the exact effect of every food in the diet is determined.

Kentucky Medical Journal, Bowling Green

35 395 452 (Sept.) 1937

- An Evaluation of Electrical Heart Sound Records from Clinical Standpoint E F Horne Louisville—p 432
 Bacteriologic and Serologic Studies in Epidemic of Poliomyelitis in Kentucky 1935 E C Rosenow Rochester Minn Lillian H South and A T McCormack Louisville—p 437
 Encephalitis Lethargica Complicating Bilateral Acute Suppurative Mastoiditis Case G F Doyle Winchester—p 446

Maine Medical Journal, Portland

28 207 228 (Sept.) 1937

- Is Medicine to Be Socialized? R G Leland Chicago—p 207
 Why Stammer? T E Emery Gardiner—p 217

Michigan State Medical Society Journal, Lansing

36 613 732 (Sept.) 1937

- Further Observations on Acute Perforated Acanthosis of Stomach and Duodenum H K Shawan Detroit—p 629
 Tuberculosis in High Schools Variations in Findings D S Brachman Detroit—p 632
 The Use of the Laparoscope T N Horan Detroit—p 634
 Undulant Fever (Brucellosis) S E Gould Eloise—p 637
 Treatment of Atrophic Arthritis B M Overholt and M A Mortensen Battle Creek—p 640
 Infantile Eczema S J Levin Detroit—p 645

Minnesota Medicine, St Paul

20 559 626 (Sept.) 1937

- The Doctor Looks at Social Security M Lick Erie Pa—p 559
 Surgical Diseases of Pancreas with Especial Reference to Cysts Acute Pancreatic Necrosis and Hyperinsulinism O H Wangenstein Minneapolis—p 566
 Acute Suppurative Otitis Media and Mastoiditis C L Oppegaard Crookston—p 576
 Immunization Against the Common Diseases of Childhood W B Richards St Cloud—p 579
 Acute Appendicitis in Children Under Twelve Years A N Collins Duluth—p 583
 Postinstitutional Care of the Insane W P Gardner Fergus Fall—p 585
 Hernia Injection or Operation? R J Gallagher Waseca—p 589
 Treatment of Bladder Tumors P F Donohue St Paul—p 595
 Acute Conditions in Abdomen A E Sohmer Mankato—p 597
 Collection Agency Racket S B Houch Minneapolis—p 601

Treatment of Bladder Tumors—Donohue maintains that good results in the treatment of tumors of the bladder, more than anything else depend on seeing patients early in the course of the disease. Hematuria and persistent irritation of the bladder call for immediate cystoscopic examination. The destruction or removal of superficial tumors by appropriate methods is rarely difficult and is followed by good results. The tendency toward recurrence of these tumors should be kept in

mind, and cystoscopic examinations should be performed periodically. Cases of multiple papillomatosis are often resistant to the treatment ordinarily effective in tumors of the superficial type and complete removal of the bladder should be considered. Poor results in the treatment of infiltrating tumors are unavoidable when the growth is extensive. There is no excuse when poor results follow the use of improper methods such as the attempt at destruction of any infiltrating growth by electrofulguration alone, whether applied transurethrally or suprapubically. Treatment of infiltrating tumors depends on the location of the growth and the invasion of the wall of the bladder. Segmental resection is advisable for tumors that are localized. Complete cystectomy is indicated in selected cases, when there is extensive invasion of the base or vesical neck. The ureters are disposed of by implantation into the skin or intestine according to conditions in the individual case. Radical surgery is often contraindicated. The purpose of treatment then is to alleviate suffering and to prolong life. Such results may be obtained by combining suprapubic diathermy and radium implantation with postoperative high voltage roentgen treatment.

Missouri State Medical Assn Journal, St Louis

34 327 364 (Sept.) 1937

- Respiratory Allergy Diagnosis and Treatment H J Rinkel Kansas City—p 327
 Food Allergy in Internal Medicine with Especial Reference to Paroxysmal Tachycardia and Essential Hypertension L P Gay St Louis—p 332
 The Problems of Mental Health G W Robinson Sr Kansas City—p 339
 Bleeding in Pregnancy R B Schutz Kansas City—p 341
 Etiology of Primary Glaucoma and Its Physiologic Treatment E A Miller and T M Paul St Joseph—p 345

New England Journal of Medicine, Boston

217 381 420 (Sept 2) 1937

- The Problem of Alcoholism at the Boston City Hospital M Moore and Mildred Geneva Gray Boston—p 381
 Prevention and Control of Tuberculosis in Massachusetts F T Lord Boston—p 389
 Diabetes Mellitus in a Cat F Bloom Flushing N Y—p 395
 Address to the Graduating Class of the Worcester Memorial Hospital Nursing School S B Woodward Worcester—p 398

217 421 458 (Sept 9) 1937

- Role of Contact Examinations in Control of Tuberculosis A S Pope Boston—p 421
 First Infection Type of Tuberculosis in Adults Five Year Study of Student Nurses at the Boston City Hospital T L Bridger and W W Spink Boston—p 424
 Results of Collapse Therapy in Pulmonary Tuberculosis J L Wilson, West Haven Conn—p 432
 *Asymptomatic Scurvy Its Relation to Wound Healing and Its Incidence in Patients with Peptic Ulcer T H Ingalls and H A Warren Boston—p 443

217 459 502 (Sept 16) 1937

- American Medicine Expert Testimony Out of Court A M Butler Boston—p 459
 Gastrojejunostomy in Retrospect P E True Fall River Ma—p 462
 Duration of Attacks of Angina Pectoris on Exertion and Effect of Nitroglycerin and Amyl Nitrite J E F Riseman and M G Brown Boston—p 470

Asymptomatic Scurvy, Wound Healing and Peptic Ulcer—Ingalls and Warren present twenty cases of peptic ulcer with studies of the vitamin C level in the blood plasma of these patients, point out the relation of the low values found to the deficient vitamin C intake and discuss the possible effects of asymptomatic scurvy on healing of the ulcer, on gastrointestinal hemorrhage and on wound healing following surgical operation on such patients. Determinations of the amount of vitamin C in the blood plasma were made eighteen, or 90 per cent of the patients had less than the normal amount (from about 0.65 to 2 mg per hundred cubic centimeters) of vitamin C in the blood. This ranged from zero to 0.6 mg, with an average of 0.19 mg per hundred cubic centimeters. Only two patients showed a normal content 1.15 mg in each instance. At least one reason for the low values was an inadequate intake of vitamin C. Two patients have since been given massive doses of ascorbic acid with a rapid rise to normal. This would seem to suggest that these patients are capable of absorbing vitamin C in a normal way and that alkaline therapy will not prevent a normal absorption if a sufficient amount of the vitamin is ingested. None of these patients showed evidence of

clinical scurvy, and experience with the Sippy diet by a large number of observers has shown that the incidence of scurvy occurring in these individuals is slight. On the other hand eight of the authors' twenty patients had had gastro-intestinal hemorrhages in the past. The blood value of these patients ranged from 0.2 to 0.6 mg per hundred cubic centimeters. However, the specimens of blood were not taken at or shortly after the time of the hemorrhage, so that the exact level at the time the bleeding occurred is not known. Further studies on this aspect of the problem are being pursued. Surgical implications are accentuated when it is considered that such patients are not only often operated on many weeks after the inauguration of a dietary regimen but are subsequently maintained on intravenous fluid or milk long enough to exhaust the small tissue reserve of the vitamin that remains. Although there is no indication that a lack of vitamin C is an etiologic factor in the genesis of duodenal ulcer, it is worth while to consider the role of the vitamin in the healing of the lesion when once it is formed.

New Jersey Medical Society Journal, Trenton

34 539 590 (Sept.) 1937

- Experiences with the Hindenburg Patients and Review of Cutaneous Burns O R Holters Asbury Park—p 545
The Neuropsychiatric Clinic of the General Hospital T Rothman Paterson—p 548
The New Jersey State Project for Cerebral Palsy W M Phelps Vine land—p 552
Fallacious Beliefs Regarding Blood Transfusions A L Shulman Union City and F A Glass, Weehawken—p 555
Torsion of Fallopian Tube Simulating Acute Appendicitis Case D R Mishell Newark—p 558
Evidences of Early Infection in Tuberculosis I L Applebaum Newark—p 559
How the Radiologist Can Help the General Practitioner in Gastro-Intestinal Diseases G E Pfahler Philadelphia—p 561

New York State Journal of Medicine, New York

37 1479 1538 (Sept. 1) 1937

- Maternal Mortality in Erie County N Y Report of Survey by Maternal Mortality Survey Committee of Erie County Medical Society M Israel Buffalo—p 1479
Differentiation Between Receding and Progressing Cases of Petrositis R Almour New York—p 1495
Nonpollen Inhalants in Hay Fever Study of Their Part in Its Symptomatology H S Berkoff New York—p 1499
The Warble Fly—Dermatobia Hominis Linnaeus Report of Two Cases Imported from Costa Rica A S Price New York—p 1503
Collapse Complicating Varicose Vein Injection of Sodium Morrhuate E F Traub and W B Swarts Jr New York—p 1506
Lengthening Septum Mobile Nasi New Plastic Procedure M W Mootnick New York—p 1509
Noma V I Bonafede Sonoma—p 1511

Ohio State Medical Journal, Columbus

33 949 1063 (Sept.) 1937

- New Light on Modern Physical Degeneration from Field Studies Among Primitive Races W A Price Cleveland—p 965
Differential Diagnosis and Therapeutic Rationale of Anemic States C A Doan C V Moore and T F Ross Columbus—p 975
Some Uses and Abuses of Digitalis W H Bunn Youngstown—p 980
Importance of After Treatment of the Surgical Patient G H Reams Toledo—p 986
*Potential Dangers of Viosterol During Pregnancy with Observations of Calcification of Placentas W Brehm Columbus—p 990
Parenteral Use of Liver in Cases of Edema W H Stix Cincinnati—p 995
Cerebrospinal Fluid Changes in Cases of Intracranial Tumor Note O A Turner and I M Liebow Cleveland—p 997
Gastro-Intestinal Allergy I M Hinnant Cleveland—p 998
Essential Hypertension and Its Treatment by Operations on Sympathetic Nervous System W M Craig Rochester Minn—p 1003
Pleural Mesothelioma J T Vitkus Cleveland—p 1007
Insulin Shock Treatment in Schizophrenia Preliminary Report A Michael Columbus—p 1010

Potential Dangers of Viosterol During Pregnancy—

Brehm agrees that calcium is essentially necessary in pregnancy, but there seems to be some factor or factors when viosterol is used with it which render it either more assimilable, its retention and deposition more pronounced, or which produce an irregular mobilization, regardless of whether the calcium is given as inorganic adjuncts or by its ingestion in foods. During the last ten years he has given to his obstetric patients, except when contraindicated, 5 drops of viosterol (0.3 cc.) three times a day for two weeks and then 5 grains (0.3 Gm) of calcium three times a day for two weeks, alternating thus every

two weeks throughout the pregnancy. Soon he began to note calcified areas in the placentas and a decrease in the size of the fontanels with fusion of the cranial sutures, which could be shown by the roentgenogram before delivery. This was easily demonstrated after delivery with a consequent lessened molding of the fetal head and an increase in the length of labors. Marked calcification was found in the kidneys of three stillborn infants without any other apparent etiology. The author then began the study of 540 obstetric cases divided equally as follows: (1) those receiving calcium and viosterol, (2) those receiving calcium alone, (3) those receiving viosterol alone, (4) those receiving calcium and cod liver oil, (5) those receiving cod liver oil alone and (6) those receiving none of the foregoing except as furnished by a normal diet. He found that viosterol causes definite calcification in the placenta, which is greatly increased by the ingestion of calcium. Cod liver oil seems preferable to viosterol. Natural vitamins when indicated seem preferable to synthetic ones. It is just as important in treating a patient not to produce by overtreatment a more serious condition than the condition originally treated. Considerable more research work is advisable before the promiscuous use of viosterol is continued.

Public Health Reports, Washington, D C

52 1207 1248 (Sept. 3) 1937

- Studies in Chemotherapy VI Chemotherapy of Choriomeningitis Virus Infection in Mice with Sulfonamide Compounds S M Roenthal J G Wooley and H Bauer—p 1211
Toxicology of Selenium IV Effects of Exposure to Hydrogen Selenide H C Dudley and J W Miller—p 1217

52 1249 1296 (Sept. 10) 1937

- Further Studies on Minimal Threshold of Chronic Endemic Dental Fluorosis H T Dean and E Elvove—p 1249
Relationship of Rural Health Program to the Needs in the Area J W Mountin E H Pennell and Hazel O Hara—p 1264

Rhode Island Medical Journal, Providence

20 139 154 (Sept.) 1937

- Rocky Mountain Spotted Fever in Rhode Island E A McLaughlin and M L Grover Providence—p 139
Affections of Colon Their Classification and Description C W McClure and J Zielinski Boston—p 143

Science, New York

86 249 274 (Sept. 17) 1937

- *Does the Virus of Influenza Cause Neurologic Manifestations? Joseph B Neal and Harriet L Wilcox New York—p 267
Occurrence of Possible Mutation Cancer to Non-Cancer in the House Mouse W S Murray Springfield N Y—p 268
Changes in Human Tissue Electrolytes in Senescence H S Simms and A Stolman New York—p 269
Effects of Carbohydrate Plethora in Experimental Diabetes S B Barker and J E Sweet New York—p 270
Brain Metabolism During Hypoglycemic Treatment of Schizophrenia H E Himwich Albany N Y K M Bowman J Morris New York and J F Fackas—p 271

Virus of Influenza and Neurologic Manifestations—

During the last several months, Neal and Wilcox saw a number of cases in which an acute infection of the respiratory tract diagnosed as grip or influenza has been followed within a short time by the development of various neurologic conditions. In sixteen such instances the serum of the patients has been obtained within one to three or four months after the infection in the upper part of the respiratory tract. In fourteen instances no protective antibodies were demonstrated in the serums tested for influenzal antibodies by means of the method of Francis and Magill. In one instance the serum virus mixtures indicated slight protection and in one instance a partial protection. In no instance was there complete protection. It therefore seems reasonable to assume that the original diagnosis of influenza or grip had been incorrect in at least fifteen of the cases. Further indications that the virus of influenza is not an etiologic factor in cases of encephalitis or encephalomyelitis is afforded by two facts. In a personal communication Francis has stated that in experimental animals the virus of influenza does not invade the central nervous system and Snegireff, reporting from several New Jersey state institutions in which epidemics of influenza have occurred, states that there has been no instance in which encephalitis has developed during or following influenza outbreaks of influenza. It is obvious that further work must be done to confirm or refute this opinion.

Tennessee State Medical Assn Journal, Nashville

30 313 384 (Sept.) 1937

Infection and Trauma in the Diabetic J S Read Nashville—p 368

Virginia Medical Monthly, Richmond

64 241 298 (Aug) 1937

- *Adhesive Pericarditis—Treatment by Section of Left Phrenic Nerve W B Martin Norfolk—p 241
- Extravasation of Urine Associated with Urethral Strictures Presentation of New Urethrotome W H Toulson and O C Brantigan Baltimore—p 247
- The Human Stomach in Health and Disease F L Apperly Richmond—p 251
- Acute Intestinal Obstruction H H Trout Roanoke—p 256
- Spina Bifida with Myelomeningocele Case Report on Sixteen Year Old Girl R A Nichols Jr Richmond—p 264
- Serum Treatment of Pneumonia J Natt, Roanoke—p 267
- Scope of Psychiatry in Handling of Social Problems D C Wilson Charlottesville—p 270
- Rat Bite Fever Report of Two Cases H Walker Richmond—p 272
- Causes Diagnosis and Treatment of Uterine Bleeding E S Grose Lynchburg—p 275
- Liver Cyst J A Gannon Washington D C—p 279
- Group Practice—as Discussed in American Medicine W B Porter Richmond—p 280

Adhesive Pericarditis—Martin submitted three patients to section of the left phrenic nerve for adhesive pericarditis. He believes that too little weight has been given to the damaging effect on the heart of diaphragmatic adhesions. Since the contractions of the heart and the diaphragm are rarely synchronous, there usually exists an opposite pull at the time of each contraction of the heart. This would certainly place a greater strain on the cardiac muscle than a pull against a rigid structure. There has also been a tendency to a rather rigid classification of adhesive pericarditis. There is no doubt a wide variation in the number, density and point of attachment of adhesions. Clinically, the important consideration is the treatment of those cases in which the heart is definitely overloaded. The characteristic picture described by Pick is not difficult to recognize and it is this condition that demands relief. These patients are suffering from chronic decompensation with massive enlargement of the liver, ascites moderate, dependent edema and a tendency to the accumulation of pleural transudate, especially on the right side. Adhesive pericarditis may or may not be associated with hypertension, rheumatic heart disease, myocardial degeneration or coronary disease. Considering only those cases with enlarged hearts, it would seem probable that the diaphragmatic pull plays a more important part in producing decompensation than mediastinal adhesions or adhesions to the anterior wall of the chest. The great strain placed on the cardiac muscle by the counterpull of the diaphragm has not been emphasized. When the pericardium is thickened or when it is greatly distended, thereby losing a certain amount of elasticity, there would be a tendency to compression of the heart with each downward pull of the diaphragm. This constriction would interfere with the normal inflow of the blood just as in the constricting type of pericarditis. There are certain cases of massive hypertrophy that are indistinguishable clinically from adhesive pericarditis. If this reasoning is correct, section of the left phrenic nerve should give a certain measure of relief in cases of this type. Since phrenicotomy presents no particular technical difficulties, it would seem to be the operation of choice in selected cases of adhesive pericarditis. In certain cases no further operative procedure may be necessary. If however, cardiolytic also is indicated, the preliminary phrenicotomy would not in any way interfere with its subsequent performance.

Wisconsin Medical Journal, Madison

36 697 796 (Sept) 1937

- Carcinoma of Bronchus and Its Treatment N A Womack St. Louis—p 711
- Cardiogram Roentgenography Visualization of the Treatment with Pneumotic Bag L E Fazen and T J Pfeffer Racine—p 718
- Tuberculosis of Myocardium Report of Case A L Banai and L J Van Hecke Wauwatosa—p 721
- Fat Embolism Case Report of Cerebral Involvement J C McCarter Madison—p 724
- Measuring Tendency to Hemorrhage in Cases of Obstructive Jaundice with Especial Reference to Photo-Electric Method M W Comfort and Anne K Nygaard Rochester Minn—p 727
- Meckel's Diverticulum in Site of Ventral Incisional Hernia Report of Case J L Keeley Madison—p 733

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

18 265 344 (Aug) 1937

- Influence of Glycerol on Skin Necrosis Produced by Staphylococcus Toxin Margaret Llewellyn Smith—p 265
- Centrifugation Studies IV Megathierium Bacteriophage and Viruses of Equine Encephalomyelitis and Louping Ill F F Tang, W J Elford and I A Galloway—p 269
- Relationships Between Liquid Crystalline Preparations of Cucumber Viruses J and 4 and Strains of Tobacco Mosaic Virus F C Bawden and N W Pirie—p 275
- Nutrition of Staphylococcus Aureus Sulfur Requirements P Fildes and G M Richardson—p 292
- Further Investigations on Chemistry, Toxicity and Other Biologic Properties of Different Fractions of Dysentery Bacteria L Olitzki, J Leibowitz and M Berman—p 305
- Hypothermic Factor of Bacillus Dysenteriae Shiga L Olitzki and S Avinery—p 316
- Nutrition of Staphylococcus Aureus, Nitrogen Requirements G P Gladstone—p 322
- *Pathogenicity to Animals of Viruses Isolated from Cases of Human Influenza J McIntosh and F R Selbie—p 334

Pathogenicity to Animals of Viruses of Human Influenza—McIntosh and Selbie performed experiments from which it is evident that viruses capable of causing infection in laboratory animals can be obtained from filtered extracts from the lungs of cases of human influenza. It also appears that these viruses are partially neutralized by convalescent influenzal sera, and some degree of protection was afforded by an immune serum (1H) prepared against the influenzal virus of Smith, Andrewes and Laird. Much more work has to be done on the relationship of these various viruses before their correct relationship is known. The evolution of a typical disease seems much slower with the authors' strains than with those of Smith, Andrewes and Laird. In the ferret there is the usual initial rise of temperature in the first few days after the inoculation, but the secondary rise is delayed till the tenth to the fourteenth day or even longer. It is at this period that the characteristic changes of the lungs are most definite. But as Smith and his colleagues have made a point of carrying on the passages at short intervals, their virus may have adapted itself to such a procedure. In their case a local and superficial proliferation of the virus occurs, while the authors, on the other hand have allowed time for a more general invasion of the tissues, and particularly those of the lungs.

British Medical Journal, London

2 359-402 (Aug 21) 1937

- Modern Treatment and Results of Treatment of Fractures of Neck of Femur E W H Groves—p 359
- Operative Treatment and Results in Fracture of Neck of Femur S Johansson—p 361
- Physical Disorder in 164 Consecutive Admissions to Mental Hospital Incidence and Significance R J Phillips—p 363
- Rupture of Pregnant Uterus from Indirect Injury Grace Stapleton—p 367
- *Epidemic of Paratyphoid B Fever in Liverpool and District W M Frazer, B T J Glover and V Glass—p 369
- Regional Distribution of Cancer in the Oxford Area G B Leyton and H G Leyton—p 378

Epidemic of Paratyphoid B Fever in Liverpool—Frazer and his associates discuss an outbreak of paratyphoid B fever that occurred in Liverpool and Bootle at the end of 1936 and beginning of 1937, with 123 cases and eleven deaths. An additional nine cases in rural districts were also considered to be connected with this outbreak. The circumstances of the rise and decline of the epidemic were compatible with the belief that it was due to the infection of loaves of bread by a carrier of Bacterium paratyphosum B who handled the bread consumed by 62 per cent of the patients. The isolation of the causal organism from the stools of patients proved to be a great aid to diagnosis so early in the illness as the first week. Positive stools were presented by 50 per cent of the patients in the seventh week of illness and 20 per cent were still excreting the organism in the ninth week. Ninety-five strains of Bacterium paratyphosum B isolated from forty-eight patients fell within Kristensen and Boylen's group R₁. The survival of Bacterium paratyphosum B on bread crusts was established. With few exceptions patients made uneventful recoveries. In

children the onset was abrupt with abdominal symptoms simulating an acute condition of the abdomen. Three patients, adult women, persisted as carriers for five months or more.

Journal of Mental Science, London

83 247 346 (May) 1937

Inquiry into Incidence of Neuropathic Conditions in Relatives of Normal Persons. Report by the Mental Deficiency Committee of the Royal Medico-Psychological Association—p. 247

*Diffuse White Matter Gliosis in Mental Defectives. A Meyer and L C Cool—p. 258

Aspects of Temperament in Adolescent Male Offenders. H T P Young—p. 268

Endemic Bacillary Dysentery. J J B Martin—p. 289

Hypnosis in Mental Hospital Practice. C L Copeland and E H Kitching—p. 316

Diffuse White Matter Gliosis in Mental Defectives—Meyer and Cook studied histologically seven low grade defective subjects showing gross neurologic lesions, six microcephalic persons with spastic diplegia and severe mental defect, two able-bodied microcephalic patients without gross neurologic signs, one simple able-bodied idiot and six mongols. The gliosis of the white matter was observed in cases in which there was a demyelinated condition of the globus pallidus, marbled condition of the striate body, and in related progressive conditions, commencing at birth or in infancy. In all the cases the gliosis showed no difference from that seen in conditions of adult life, and there were none of the developmental errors of the immature or blastomatous characteristic of the glia cells, such as are to be seen in tuberous sclerosis, von Recklinghausen's disease, and the like. In the microgyric brains, the appearance of the white matter gliosis in regions in which cortical disturbances were negligible, e g, in the cerebellum, suggests that the gliosis was not secondary to the malformation of the cortex. More often than is realized developmental arrest is only the indicator of the time of the damage and not the expression of an intrinsic, abiotrophic or faulty tendency of the tissue. In many of the cases there is some evidence suggesting that a vascular factor or some other type of defective tissue oxygenation might be the immediate cause of the pathogenic change. In one of the mongols the Sommer sector of the horn of Ammon showed a well marked sclerosis, and, in addition, there were in the mongols and other cases perivascular changes as well as diffuse lesions. Defective tissue oxygenation is often merely a final common pathway of etiologically different disease processes. The observations in these cases give a forcible warning against indiscriminate use of such brains for comparative purposes, e g, measurements of the cortex, which are liable to grave error unless a systematic investigation of the whole brain is made. This restraint should not obscure the fact that the extremely high incidence of lesions within the white matter adds a new feature to the pathology of mental deficiency. Any research into the pathogenesis of mental deficiency requires impartial examination of all parts of the brain.

Lancet, London

2 175 238 (July 24) 1937

Some Thoughts on Medical Education. R J Johnstone—p. 175

*Vitamin C and Infection. Excretion of Vitamin C in Osteomyelitis. M A Abbasy, L J Harris and N G Hill—p. 177

Id. Excretion of Vitamin C in Pulmonary Tuberculosis and in Rheumatoid Arthritis. M A Abbasy, L J Harris and P Ellman—p. 181

*Id. Influence of Infection on Vitamin C Content of Tissues of Animals. L J Harris, R Passmore and W Pagel—p. 183

Earlier Diagnosis of Pulmonary Tuberculosis with Reference to Symptoms. J Maxwell—p. 186

Medullary Necrosis of Kidneys. H L Sheehan—p. 187

Excretion of Vitamin C in Osteomyelitis—Abbasy and his collaborators have shown that in 193 patients suffering from juvenile rheumatism, eighty-eight cases of surgical tuberculosis and cases of colds and influenza a marked deficit was present in the amount of vitamin C excreted in their urine as compared with sixty-four control subjects receiving the same dietary intake of the vitamin. The infected subjects likewise gave a consistently diminished response to test doses of the vitamin. In seventeen active cases of osteomyelitis, seventeen half-healed cases, sixteen healed cases and ten controls the range of values for the excretions of vitamin C by the active cases was only about one half of that of the control cases—viz, from 9 to

15 mg daily as compared with from 20 to 40 mg daily. Whereas the control cases were all well above the standard level of excretion (average 26 mg daily), 10 per cent of the active cases were below the standard (average 116 mg daily). Healed cases were normal in their excretions and half-healed cases were intermediate. The control and the healed cases reacted well on the first day to doses of 700 mg per 140 pounds (63.5 Kg), while the active cases did not react until the second or third day. The degree of subnormality in the vitamin C titer goes roughly parallel with the severity of the infection, and, correspondingly, the better healed cases show a more adequate output of vitamin C than those in the earlier stages of healing. Osteomyelitis, like the other infective conditions examined, causes a marked diminution in the vitamin C reserves or degree of saturation. The patient when healed returns to normal in his usage of vitamin C and there is no evidence of a condition of latent infection seen in acute rheumatism.

Influence of Infection on Vitamin C Content of Tissues—Harris and his associates studied the effect on the excretion of vitamin C in guinea-pigs infected with *Bacterium aertrycke*, *Pasteurella pseudotuberculosis*, diphtheria toxin and *Mycobacterium tuberculosis*. Estimations were made of the amount of vitamin C in the adrenals and liver. The titration of the organs for vitamin C were carried out by the microchemical method of Birch, Harris and Ray. A considerable diminution was observed in the amount of vitamin C present in the adrenals as compared with controls which had received the same dietary intake of vitamin C. The vitamin C in the liver was not significantly affected. In the more chronic tuberculous infection in guinea-pigs there was a diminution in the amount of vitamin C in the adrenals and also some fall in the concentration of the vitamin in the liver.

Medical Journal of Australia, Sydney

2 197 242 (Aug 7) 1937

Epidemiologic Study. H Sutton—p. 197

Skin Cancer and Its Treatment. V McDowall—p. 210

Carcinoma of the Skin and Lip. E H Molesworth—p. 218

Interstitial Radium Treatment in Carcinoma of Lip. Review of Five Cases. C de Monchaux—p. 221

2 243 280 (Aug 14) 1937

Gastroscopy. J Horan—p. 243

Diluent for Diphtheritic Toxin for Schick's Test. C W Ader and R W Patterson—p. 248

*Diphtheria Immunization. New Diluted Schick Fluid. C R Merrilees—p. 251

Some Aspects of Pediatric Endocrinology. L Dods—p. 255

Acquired Diverticula of Large Bowel. J A Kennedy—p. 260

New Diluted Schick Fluid in Diphtheria Immunization—Merrilees has used a new diluted (8.4 Gm of bone acid, 15.9 Gm of sodium chloride, 5.7 Gm of borax, 5 Gm of purified gelatin and 2 liters of distilled water) diphtheritic toxin in the Schick test of 5,000 children. The test is done in the usual way by injecting an intradermal dose of 0.2 cc. into the flexor arm. The result is read on the fifth or sixth day and has a characteristic appearance. There are three stages of reaction: the immediate reaction, the second day reaction and the first day reaction. To avoid ambiguity the day of injection is the first day. The immediate reaction appears suddenly within a few minutes and fades just as quickly. It varies in intensity and appears to have no relation to any specific reactions. Read on the fifth day, a normal Schick reaction with a new product is seen as a striking patch of redness on a normal skin. There is practically no infiltration, there is no areolar paleness and there is no tenderness or pain. The color is best described as that of a moderate sunburn. Although the color varies in intensity, the diameter is always about 2 cm. In reading the test, good diffused white light is necessary and stretching of the skin must be avoided. A normal pseudoreaction cannot be confused with a Moloney reaction. A large proportion of pseudoreactions are observed. They are of two types, according to whether they resemble the Moloney or Schick reaction. The former is merely a mild Moloney reaction and is found only in those who react to the Moloney test. The other is discovered by a control of heated Schick reaction. It is of little practical importance, as it fades before the first day, when the true Schick reaction is easily read.

Archives Internat de Med Expérimentale, Liege

12 371 505 (Sept.) 1937

- *Studies on Effects of Colchicine on Coagulation of Blood R Loicq
—p 371
- Contribution to Studies on Heterogenic Antigens G Bruynoghe
—p 397
- *Behavior of Blood Sugar in Women During Intermenstrual and Menstrual Period T S Auerbach—p 419
- Experimental Studies on Anemias Provoked by Protein Shock in Rabbits M Millet—p 437

Effect of Colchicine on Coagulation of Blood—Loicq shows that colchicine in a dose of 3 mg per kilogram produces in rabbits a reduction in the number of leukocytes which is secondarily followed by an increase occasionally as considerable as a leukocytosis, which attains its maximum from eight to twelve hours after the administration of the substance. In the course of the phase of colchicine hypoleukocytosis there is always a more or less pronounced acceleration of the time of recalcification of recalcified ovalated plasma. On the other hand, in the course of the hyperleukocytic period there is a retardation of the time of coagulation of the recalcified ovalated plasma. The appearance of the serozyme (first phase of the coagulation) takes place within the normal delay of the primary period of hypoleukocytosis determined by the colchicine and is retarded during the period of hyperleukocytosis. The cytozyme-serozyme reaction, which gives rise to thrombin (second phase), is hardly modified in the course of hypoleukocytosis, while it is considerably retarded and at times even totally prevented in the animals with postcolchicine hyperleukocytosis. The action of thrombin on the fibrinogen (third phase) is produced with the same rapidity before and after the administration of colchicine whether the animal is in the period of hypoleukocytosis or of hyperleukocytosis. The transformation of fibrinogen into fibrin under the influence of thrombin is accomplished normally after the administration of colchicine, whatever may be the number of leukocytes of the circulating blood. The retardation observed in the coagulation of the blood after the administration of colchicine depends purely on an augmentation of the antithrombins acting on the first and second phases of the coagulation of the blood. The number of blood platelets diminishes in the course of the hypoleukocytosis but rises again afterward and during the phase of postcolchicine hyperleukocytosis gives values that are lower than or greatly exceed the normal ones. Sodium nucleate produces a marked hyperleukocytosis, which is always accompanied by a considerable retardation of the formation of the coagulum at the time of the recalcification of the ovalated plasma taken fourteen hours after the administration of this product in a dose of 250 mg per kilogram of body weight.

Blood Sugar During Intermenstrual and Menstrual Period—The observation that in some women a craving for sweets increases shortly before or during menstruation induced Auerbach to investigate whether this subjective manifestation has objective causes the more so since this craving for sweets during the menstrual period was observed also in women who ordinarily were not particularly fond of sweets. Blood sugar tests were made on forty-nine women during the intermenstrual and during the menstrual period and control tests were made on six men. First the blood sugar was determined while the persons were still fasting. Then 50 Gm of dextrose was given in 200 cc of tea and blood sugar tests were made after thirty, forty-five, sixty, ninety, 120, 150 and 180 minutes. It was observed that in the women the blood sugar curve varies during the different phases of the menstrual cycle and that there are two types of curves. In one group of women the blood sugar is lower during the menstrual than during the intermenstrual period. In a second group it is higher during the menstrual period. The curves observed in men differ on the average from those of women. Discussing the results of these tests the author points out that the women who had the first type of blood sugar curve (lower during menstruation) had a greater amount of fatty than of muscular tissue whereas, in the second group the amount of muscular tissue was comparatively greater. In view of the fact that the adrenals influence the development of the musculature as well as the carbohydrate metabolism it is suggested that the adrenal cortex plays a part, in that the greater fluctuation in the blood sugar and the greater craving for sweets is the result of a relative weakness of the adrenal cortex.

Presse Medicale, Paris

45 1307 1322 (Sept 15) 1937

- When and How to Employ Vaccination with BCG J Paraf and Boissonet—p 1307
- *Clinical Form of Arterial Hypertension Pseudotumoral Hypertension J Dereux—p 1309

Pseudotumoral Hypertension—Dereux points out that certain patients with arterial hypertension present themselves for examination with a syndrome of intracranial hypertension. These patients have ordinary or malignant hypertension but what dominates in them is the intracranial hypertension. This hypertension governs the clinical aspects and everything else is incidental. This particular development of arterial hypertension makes of this clinical form a distinct entity for which the author suggests the term "pseudotumoral arterial hypertension." After showing why this form of hypertension presents a special entity, the author discusses the symptomatology, the pathogenesis and the etiology. He reaches the conclusion that, whatever may be the pathogenic mechanism or whatever may be the etiology, this form requires a special treatment, namely, one which combats the intracranial hypertension. When the syndrome of intracranial hypertension has been recognized in a patient with arterial hypertension and when the examination of the fundus of the eyes has revealed a papillary stasis, it is necessary to combat the hypertension of the cerebrospinal fluid. During the first period the author recommends lumbar punctures and injections of hypertonic solutions and during the second period decompressive trepanation.

Revue de la Tuberculose, Paris

3 753 880 (July) 1937

- Hemoptyses Blood Dyscrasias and Transfusion M Fourester M Racine and J Paillas—p 754
- *New Method of Reading Sedimentation of Erythrocytes Hourly Curve of Sedimentation C Carez and J H Wynants—p 774
- Who Were the Precursors of Forlanini in Artificial Pneumothorax? O M Mistal—p 802

New Reading of Sedimentation of Erythrocytes—Carez and Wynants describe experimental and clinical studies on the sedimentation speed of the erythrocytes. In the clinical studies they give especial attention to tuberculous patients. They show that two sedimentations of the same value when measured by the hourly average may differ completely if their behavior is studied at fifteen minute intervals. Some become progressively accelerated, in others the rapidity remains uniform and in still others there is a retardation at the end of the reaction. As a general rule in laboratory as well as in clinical experiences, a reaction of the accelerated type indicates that the sedimentation is more rapid in comparison to its real value, a retarded reaction shows that the hourly value of the sedimentation is inferior to that which it should be in reality. The type of the hourly curve thus corrects generally the technical or physiopathologic causes which modify the rapidity of the true sedimentation. The juxtaposition of the two modes of reading the hourly curve and the hourly average give values that are of greater importance from the diagnostic and prognostic point of view than are obtainable by Westergren's method.

Monatsschrift f Geburtshilfe u Gynakologie, Basel

106 1 128 (Aug.) 1937

- Investigations on Physiology of Mammary Gland A G Kochs—p 1
- Thyreotropic Hormone During Pregnancy F Bonilla and H Kramann—p 24
- Malignant Myoma of Fleum Simulating Ovarian Cystoma H Kramann—p 27
- Fatalities After Gynecologic Operations P Steiner—p 33
- *Aspects of Arrhenoblastoma A Foderl—p 54
- Cutaneous Emphysema After Cesarean Operation H Schlesinger—p 66

Aspects of Arrhenoblastoma—Foderl reports the history of a girl who from her fifteenth year on developed some secondary male sex characters—deep voice hairgrowth and so on. At the age of 17 she asked medical advice on account of a hard tumor below the umbilicus. Laparotomy disclosed a tumor on the left ovary. The adnexa of the left side were removed. Twenty-four days after the operation the first menstruation set in. The male hairgrowth and other male characteristics disappeared. The histologic examination of the surgical specimen disclosed an arrhenoblastoma of type II of R Meyer's classification which is characterized by solid cordlike epithelial

proliferations, which pass into diffuse proliferations and have a sarcomatous structure." In discussing the problem as to how a gonadal cell group can undergo sexual change and assume male characteristics, the author emphasizes that an analogous gonadal tumor in men is unknown, that is, there is no testicular tumor which causes the development of female characteristics in men. In view of the fact that the female cells have two sex chromosomes whereas the male cells have only one, it may be assumed that from the germ cell with female factors male cells may develop if, in the course of the atypical because blastomatous cell division, one sex chromosome will get lost, however, germ cells with male determination can never turn into female cells, because the required chromosome is not present.

Arch Ital d Mal d App Diger, Bologna

6 295 400 (Aug.) 1937

- Pathogenesis of Plastic Limitis of Stomach G Oselladore—p 295
Mega Esophagus Cases L Benacchio—p 315
Action of Mechanical Stimulation on Gastric Secretion G Annoni and G Cozzutti—p 348
Primary Fusocellular Sarcoma of Liver E L Beluffi—p 365
*Effect of Calcium on Amount and Acidity of Gastric Secretion C Cella—p 381

Effect of Calcium on Gastric Secretion—Cella made determinations of the gastric secretion of normal persons and of patients suffering from increased or decreased gastric secretion. In resting persons with a fasting stomach fractional withdrawal of the secretion was performed before and for two hours after administration of an intravenous injection of 1 cc, 25 cc or 10 cc of a 10 per cent calcium chloride solution or 10 cc of a 10 per cent calcium gluconate solution, respectively. The author concludes that, owing to its sympathicotropic effects, calcium modifies neither the amount nor the acidity of gastric secretion of normal persons. The same dose of calcium which stimulates the gastric sympathetic system of one person may paralyze that of another one according to their individual sympathetic excitability. It may also cause the opposite effects in the same person if the sympathetic excitability of the person changes. The paralyzing action of calcium on the sympathetic of the stomach takes place especially on administration of a large dose (1 Gm of calcium chloride). However, small doses of calcium (from 0.1 to 0.25 Gm of calcium chloride or 1 Gm of calcium gluconate) may also paralyze the gastric sympathetic

Clinica Medica Italiana, Milan

68 517 588 (Aug.) 1937

- *Exchanges of Water in Lungs of Patients Suffering from Decompensated Heart Disease M Calabresi and G Rocchini—p 519
Action of Extracts of Artichoke and Indian Saffron on Capillary and Venous Chloridemia and Azotemia in Patients Suffering from Renal Diseases R Messina—p 535
Experimental Angiopathy from Epinephrine L Sansone—p 551
Action of Insulin Alone or Together with Substances of Similar Action on Blood Pressure in Normal Persons V Barbera—p 567
Inversion of Viscera and Functions of Heart F Porrazzo—p 581

Exchanges of Water in Lungs in Decompensated Heart Disease—Calabresi and Rocchini determined the amount of water eliminated in the expired air in a group of patients having heart disease in decompensation and also in normal persons for control of the results. The patients suffered also from disorders of the water metabolism but the respiratory rhythm was regular. The determinations were made several hours after meals on resting patients who were trained to breathe through a Krogh valve. They expired through a system of flasks which contained sulfuric acid in which the air was dried. The amount of water eliminated in the expired air was determined by the difference of weight of the flasks containing the sulfuric acid before and after expiration. The authors found that the exchange of water in the lungs of the patients is normal. The amount of water eliminated in the expired air is about 85 per cent of the values of saturation in normal persons as well as in patients having heart diseases, provided the respiratory rhythm of the patients is normal. It depends on the humidity of the inspired air and the intensity and rhythm of respiration. The authors conclude that the diminished extrarenal elimination of water that establishes itself in patients with decompensated heart disease depends on defective elimination of water through the skin at the edematous zones. Blood does not retain water

from the air. Stasis of the lung does not prevent elimination of water through respiration. The statement in the literature about extrarenal retention of water in heart diseases being due to modifications of the physical and colloidal properties of the tissues by which the latter retain water from the blood is not supported by the results of the authors' studies. They also determined the amount of water in mixed venous and arterial blood of patients suffering from decompensated heart disease. The existence of stasis of the lung and the lack of absorption of water by the blood in the lung were verified.

Rivista di Patologia e Clinica d Tuberculosis, Bologna

11 553 632 (Aug. 31) 1937

- *Modifications Induced in Tubercle Bacilli from Short Waves I Menotti—p 553
Manometry in Pneumothorax N Triolo—p 571
Clinical Study of Modifications of Pulmonary Tonus in Parapneumothoracic Pleuritis Mechanism of Beneficial Action of Pleuritis M Mazzetti—p 583
Pleurocorticalitis from Reactivation of Primary Tuberculosis Cases M Accorimboni—p 595
Beneficial Effects of Some Pulmonary Perforations G Giusti—p 601

Modification of Tubercle Bacilli by Short Waves—Menotti subjected cultures of living virulent tubercle bacilli to irradiation with short waves (8 meters long) for two, four, six and eight hours. From the different cultures transplants were made on Petragiani's medium. Irradiated cultures, especially those which were irradiated for six or eight hours, developed exuberantly in comparison with nonirradiated cultures of the same type of bacilli. One group of guinea pigs and a group of controls were given intraperitoneal and subcutaneous injections of 1 cc of a 1:10,000 or a 1:2,000 suspension of irradiated and nonirradiated tubercle bacilli, respectively. The controls were killed ninety-four days after inoculation and showed common experimental tuberculosis. The animals which were inoculated with irradiated cultures, both those which spontaneously died and those which were killed ninety-two or ninety-five days after inoculation, showed at necropsy intense tuberculosis, which was proportional to the duration of the irradiation of the cultures. Four groups of guinea pigs and a group of controls were hypodermically inoculated with suspensions prepared from irradiated and nonirradiated cultures of tubercle bacilli. The animals were given a total number of ten injections of 1 cc each of a 1:1,000,000 tubercle bacillus suspension at intervals of five days. Suspensions prepared from irradiated cultures were given to the animals in four groups, whereas those in the control groups were given the suspension of nonirradiated cultures of the same type of tubercle bacilli. The animals in each group were left at rest for twenty days and then subcutaneously inoculated with 0.25 mg of living tubercle bacilli. The animals which were inoculated with suspensions from irradiated cultures had an infiltration reaction at the point of inoculation which did not develop in those treated by a suspension from nonirradiated cultures. They lost more weight, died sooner and developed more intense and extensive tuberculosis than the controls. At necropsy it was found that frequently there were intraperitoneal and intrapleural effusion, great hypertrophy of the liver and the spleen, complete involvement of the lung by tuberculosis, processes of caseation at the internal aspect of the peritoneum and the presence of abundant subcutaneous gelatinous exudates. The author concludes that irradiations of short waves have neither an abiotic nor an immunizing action on tubercle bacilli. They have a stimulative action which is proportional to the duration of irradiation of the cultures used in inoculating the animals.

Munchener medizinische Wochenschrift, Munich

84 1401 1440 (Sept. 3) 1937 Partial Index

- Otic Manifestations During First Dentition L Hofmann—p 1402
Ossification of Achilles Tendon H Hufnagel—p 1410
Ketone Body Excretion in Diabetic Patients Without Acetoneuria C Brentano—p 1411
*Epidemic Encephalitis in Patients Who Previously Have Had Typhoid Myelitis W Klimke—p 1413

Epidemic Encephalitis and Poliomyelitis—Klimke says that the development of epidemic encephalitis in patients fifteen or twenty years before have had acute anterior poliomyelitis from which paresis and atrophies still remained raised

the question whether a person who has passed through acute anterior poliomyelitis is more likely to develop epidemic encephalitis in later life than a person who has not had poliomyelitis. Investigations have shown that from the anatomic point of view relations exist between epidemic encephalitis and acute anterior poliomyelitis in that they represent nonsuppurating encephalitides or encephalomyelitides, and since the gray substance is most severely involved they should be referred to as polioencephalitides and polioencephalomyelitides. However, the author shows that from the etiologic, epidemiologic and clinical point of view poliomyelitis and epidemic encephalitis present distinct disease entities, in spite of the similarities in the anatomic aspects. The question of the relationship between poliomyelitis and encephalitis was first raised by Neustaedter, Hala and others, who observed positive complement reactions between the cerebrospinal fluid of encephalitis and the virus of poliomyelitis as antigen and who successfully treated encephalitis with antipoliomyelitic horse serum. From these observations they concluded that poliomyelitis and encephalitis are caused by varieties of the same etiologic agent. The author, however, states that the effectiveness of serotherapy cannot be regarded as a proof of relationship, since in poliomyelitis as well as in encephalitis therapeutic results can be produced also with non-specific serums. Moreover, an antipoliomyelitic horse serum is nonspecific, because poliomyelitis cannot be transmitted to horses and consequently no specific serum can be obtained from horses. The author reaches the conclusion that a person who has had poliomyelitis is not more susceptible to encephalitis than are other persons and that the two diseases are distinct entities.

Strahlentherapie, Berlin

59 563 720 (Aug 18) 1937 Partial Index

Present Status of Determination and Measurement of Dose H Holthusen—p 563

Radio Therapeutic Experiences in Malignant Tumors of Upper Air and Food Passages with Regional Metastases of Lymph Nodes A Pagani—p 575

*Treatment of Hemangiomas by Means of Radioactive Substances R Muller—p 602

Action of Roentgen Rays on Erythropoiesis Influence of Therapeutic Roentgen Irradiations on Erythropoiesis K Mardersteig—p 609

Biologic General Action of Roentgen Rays from Point of View of Shock Action Produced by Histamine or Similarly Acting Substances Prophylaxis of Roentgen Intoxication by Means of Histamine E Porfota—p 643

*Changes in Blood Vessels of Tissues Irradiated with Roentgen Rays F Windholz—p 662

Radioactive Substances in Treatment of Hemangiomas

—Müller reports observations on thirty-nine cases of hemangioma in which irradiation was used. Twenty-eight of the patients were less than 1 year old. The most frequent localization of the hemangioma was the region of the eyelids, the root of the nose and the lips. In other cases the hemangioma was on the forehead, cheek, head, neck, shoulder, chest or foot. Functional disturbances existed in the cases in which the hemangioma was on the eyelids (impairment of vision) and on the lips (difficulties during intake of food). The irradiation always established normal function. In all cases except those of naevus flammeus the coloration could be changed so that either the normal skin color was approached or a whitish scar resulted. Pure hemangiomas have a great sensitivity to rays and can be made to disappear with doses that exclude the possibility of impairment of the child. In angiofibromas the ray sensitivity decreases in proportion to the amount of fibrous tissue. It is inadvisable to precede the irradiation by other treatments (diathermic impuncture, coagulation or carbon dioxide snow) which are likely to cause fibrous transformation in the tissue. In all but two of the cases the cosmetic results of the irradiation were satisfactory. The author generally employed radium contact or distance irradiation, depending on the extension of the hemangiomas. Moulages produce a uniform effect and smooth scars in case of extensive superficial hemangiomas. In a few cases, larding with thorium X or with radon capillaries had to be added. The latter methods are avoided as much as possible, particularly if the hemangioma has a smooth surface. The larding was never repeated. The contact irradiation was applied by means of tubes containing 10 mg of radium element. The completion of the treatment generally required a year

The aim was to use as small a dosage as possible. The first irradiation might effect only arrest of the process or a slight paling. After from six to eight weeks the treatment was repeated and the third and fourth irradiations, which usually effected the desired results, were given after intervals of several months.

Changes in Blood Vessels Following Roentgen Irradiation—Windholz says that the fact that the terms productive endarteritis or panarteritis have been applied to the vascular changes resulting from roentgen irradiation implies that they are localized exclusively or chiefly in the arteries. To learn more about the condition of the veins, he made microscopic studies on the tissues surrounding an x-ray ulcer on the abdomen of a man who had died as the result of gastric carcinoma with hepatic metastases. It was found that in the superficial layers near the ulcer the capillary vessels, the precapillaries, the small arterioles and the venous blood vessels showed the same changes, whereas in the deeper layers (from 1.5 to 2 cm from the surface) the venous blood vessels showed more frequent and severe changes than did the arterial vessels. There were small arteries without microscopically demonstrable changes, but the accompanying veins were completely or partly obliterated and the venous walls were greatly changed. In the still deeper (subserous) tissues (3.5 cm from the surface) the arteries were entirely free from changes, whereas the walls of the accompanying veins showed in some parts a honeycombed structure. Since the studies in this case the author has investigated the behavior of the arterial and venous vessels in numerous irradiated tissues and in many, although not all of them, he has found extensive processes of obliteration in the veins, when the arteries were entirely free from changes ascribable to irradiation. Further studies are necessary to demonstrate what role the greater ray sensitivity of the veins has in the complex of the general reaction of the tissues to irradiation.

Zeitschrift für Kinderheilkunde, Berlin

59 1 128 (Aug 2) 1937 Partial Index

*Roentgenologic Demonstrable Changes in Scapula of Rachitic Children H Kilian—p 1

Therapy of Diabetic Coma in Children H Hungerland—p 13
Indications for Treatment of Rickets with Single Large Dose of Vitamin D H Braulke—p 18

Combination of Muscular and Inflammatory Juxtaepural Marginal Shadow C Bennholdt Thomsen and H H Kalbfleisch—p 45
Unsaturated Fatty Acids in Serum Fats of Nurslings with Eczema L Schornstein—p 52

Erythroblastosis of the New Born as Familial Disease H D Paché—p 73

*Dysostosis Multiplex Leonore Liebenam—p 91

Roentgenologic Changes in Rachitic Children—Kilian shows that pathologic changes are demonstrable in the scapula in a rather high percentage of cases of rickets. However, the roentgenologic demonstration of these changes is not possible in all x-ray exposures. A good survey is possible if the exposure is made while the arms of the patient are held forward and upward at an angle of approximately 135 degrees to the axis of the body. The changes are nearly always bilateral. They consist of inward bending of the scapula, of zones of transformation, of cuplike fringing, as on the end of the shafts, and so on. The changes are caused by the disproportion between the resistance of the bone and the mechanical exertion by the musculature. The muscles which cause the inward bending are the lower part of the anterior serratus and the rhomboid muscle. The subscapular muscle is less important in the bending of the scapula. If the process of decalcification is far advanced, bending of the scapula is produced not only by the aforementioned muscles but also by the rhomboides minor, the levator scapulae and the upper portion of the subscapularis. These two groups of muscles may produce bending over of the margo vertebralis. At the sites of greatest traction, zones of transformation may develop in the bone, that is, the lamellar bone, which is extremely sensitive to chronic traction, is absorbed and replaced by reticulated bone. The roentgenogram gives the impression of a division in continuity, which however, has smooth outlines and also lacks other typical symptoms of fracture. If the rachitic process is followed by cure, calcium is deposited in the zones of transformation. Since these calcium deposits enter into an unusually dense osteoid tissue, a later

roentgenogram reveals a surprisingly strong calcium shadow. As the rickets is cured, the deformities of the scapula largely disappear.

Multiple Dysostosis—Hurler reported in 1919 two cases with multiple defects, chiefly in the skeletal system, to which he gave the name dysostosis multiplex. Liebenam describes a case of her own. The patient was one of a pair of binovular female twins, and at the time when the first examination was made she was 13 years old. Whereas the second one of the twins showed normal development, the first one gave the impression of a child 6 or 7 years old, except that the head was unusually large. Retardation in the growth of the first twin was noticed between the second and the third year of life. Complete cessation in the growth in height allegedly took place between the sixth and seventh years of life. The mental development was unimpaired. The school work of the twin sisters was about the same and was above the average of the class. The twin with the retarded physical development complained often of backache and of impaired movement in most joints. The disturbances were especially noticeable during bending, climbing stairs and on attempting to lift the arms above the horizontal line. The child tired easily and frequently complained of dizziness and headaches, particularly above the eyes. Vision and hearing became impaired. Examination of the twins disclosed many defects in the child with retarded development. Examination of the eyes revealed turbidities in the cornea and hypermetropia. The hearing capacity was slightly impaired. There was a considerable curvature of the vertebral column. The deformities in the extremities were symmetrical and involved chiefly the *juxta-articular* portions. The examination of the nervous system disclosed nothing abnormal. In the course of the following eighteen months the differences between the twins increased. There was little change in the one with the retarded development. Temporary treatment with a thyroid preparation was followed by dizziness, headache, diarrhea and loss of weight and was discontinued. Improvement in the movements and in the physical activity of the child is ascribed to intensive active and passive exercises. Twenty cases of Hurler's multiple dysostosis have appeared in the literature. This number includes seven cases which were recorded in the English literature under the term gargoylism. Children with multiple dysostosis usually come from healthy families. Disproportionate dwarfism is the usual physical habitus. Other characteristic aspects are enlargement or malformation of the head, veil-like turbidities of the cornea, thoracic deformities and articular changes. Disturbances that are frequently observed in these patients are hernias, enlargement of the liver and spleen, hypertrichosis and hardness of hearing. The author further shows that dysostosis is a sharply defined disease entity which belongs to the large group of degenerative dysostoses.

Wiener klinische Wochenschrift, Vienna

50 1291 1314 (Sept 17) 1937

- Uratic Diathesis F von Muller—p 1291
 *Modification of Life Processes of Micro-Organism by Irradiation with Short Waves and Ultrashort Waves H Wertheim—p 1296
 Clinical Aspects and Therapy of Gonorrheal Arthritis E Wanderer—p 1300
 Temporary Interruption of Diabetes During Pregnancy A Forro—p 1303
 Clinical Aspects and Therapy of Uremia R Bauer—p 1305

Modification of Micro-Organisms by Irradiation—Wertheim points out that the objection has been raised that the effects he produced on micro organisms with short waves or ultrashort waves can be explained by the action of heat. He replies that careful measures were taken to exclude the effect of heat. Then he reviews the behavior of a number of bacteria and fungi in the short wave field. It was found that the same micro-organism is influenced differently by various wavelengths. Some wavelengths cause inhibition of growth, others promote growth and still others do not produce any change. Organisms of the dysentery, coli and Salmonella group have a considerable degree of resistance to short waves, but staphylococci and streptococci are rather sensitive. The latter are readily injured by irradiation with wavelengths of 15 meters. This observation has been therapeutically utilized in suppurating and septic proc-

esses. Further the author describes how the life process of yeast are influenced by short rays. He concludes that the reported results prove once more the specificity of certain wavelengths.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

38 321 574 (Nos 151 152) 1937 Partial Index

- Campaign Against Traumatism in Rural Territory V V Gerasimov—p 345
 *Procaine Hydrochloride Block A V Vishnevskiy—p 397
 Procaine Hydrochloride Block in Gastrointestinal Ulcers A V Tsvetova—p 406
 Treatment of Burns P A Nalivkin—p 436
 Surgical Methods of Treatment of Burns I N Ischenko and M P Lebedeva—p 452
 Backache in Neurologic Diseases M N Nejdning—p 510
 Malunited Fractures N I Kefer—p 533
 Causes of Pseudarthrosis and Retarded Callus Formation Nizet E. Cases G Ya Epshteyn—p 550

Procaine Hydrochloride Block—Vishnevskiy regards the effect of procaine hydrochloride block on the disease process in the nature of chemical neurotomy. One advantage of the block is that the interruption of the pathways between the central nervous system and the periphery is more complete than with surgical neurotomy. In the latter there remain a number of pathways after the nerve has been severed. The disadvantage of the method is the brevity of its action. The clinical results obtained by procaine hydrochloride block in various dystrophic processes were not inferior to those obtained by section of the nerve trunks. The author later extended his clinical trials to processes localized in various regions of the body by attempting to influence the nervous system by the application of the block at a distance from the diseased focus. The method was successful in erysipelas, edema of the larynx, dysentery, acute epididymitis, furuncle and carbuncle, as well as in dystrophic processes of neurogenic character. Because the favorable influence was most marked in the inflammatory processes, the author assumed the existence in it of a neurotrophic component. According to his hypothesis it is this component that is influenced in a favorable direction, the procaine hydrochloride block acting as a mild stimulant of the central nervous system. Conservative treatment by a brief procaine hydrochloride block of the nerves of localized superficial inflammatory processes of the skin, such as adenitis, furuncle and carbuncle, were invariably successful. Early puerperal mastitis was aborted in every instance in twenty-four hours. Paralytic ileus responded readily to lumbar procaine hydrochloride block, particularly when that disturbance of the vegetative nervous system was due to an inflammatory focus.

Hospitalstidende, Copenhagen

80 929 956 (Aug 24) 1937

- *Occurrence of Myelocytes in Normal Human Spleen A Bertelsen—p 929
 *Sedimentation Reaction of Blood E Worsaae—p 944
 Pulmonary Air Cyst Case T V Hjge—p 950

Myelocytes in Normal Human Spleen—Of the thirty four spleens examined by Bertelsen, neither history nor post mortem suggested anomaly in blood formation or spleen. He says that eosinophil myelocytes were confirmed in all cases, neutrophil myelocytes in ten cases and basophil myelocytes in seven. In six cases there were basophil leukocytes and in all cases eosinophil leukocytes, in fifteen cases in far greater number than simple apportionment of these cells between blood and splenic pulp can apparently explain. Since the literature contains no report of eosinophil or basophil myelocytes found in the normal blood, while myelocytes are a constant constituent among the cells of the pulp of the spleen, the author believes that the myelocytes are formed locally, either by myeloid separation from the large lymphocytes (unitarism) or from reticulum cells in ungranulated preliminary stages (poly-unitarism).

Sedimentation Reaction of Blood—Worsaae studies the relation between the sedimentation reaction and the plasma content of proteins shows that increased fibrinogen content always caused increased sedimentation reaction. With increase in fibrinogen, increased sedimentation reaction can result from increase in the globulin content, but this does not always follow. There is no certain correlation between the hemoglobin percentage and the sedimentation speed.

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ANTRAL GASTRITIS AND SPASM

CHAIRMAN'S ADDRESS

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NEW YORK

During the past decade an increasing volume of information concerning inflammatory conditions in the stomach has been provided by histologic studies of freshly resected material and by increasing use of the Wolf-Schindler flexible gastroscope. Henning¹ stated that gastritis is the commonest disease of the stomach. Because it is the daily task of the radiologist to search for causes of digestive disturbances, it seems desirable to examine, from his standpoint, the evidence concerning this disease and to correlate the pathologic changes with those demonstrable by roentgen methods.

A review of the histology of gastritis as presented by experienced workers in the field (Faber,² Konjetzny,³ Henning¹ and others) and of other phases such as etiology, classification and treatment, cannot be attempted here. Only the aspects will be discussed which bear directly on the problem of x-ray examination of the stomach.

Gastritis is an inflammation of the gastric wall of as yet unknown etiology, which begins in and may be limited to the mucosa but which frequently extends to the deeper layers even to the serosa. The disease may be generalized throughout the entire stomach but is often limited to one or has its maximum effect in the antrum (Faber²). As far as motility is concerned the antrum, or "canalis egestorius" (Forsell⁴) is the most important part of the stomach, therefore inflammatory changes in that region may produce serious disturbances in gastric function. This has naturally led to the use by many writers of the term "antral gastritis" or some similar expression such as "pyloritis" or "pyloric gastritis." Gastritis may produce any or all of the symptoms of peptic ulcer including hemorrhage (case 1, fig. 1), which may be slight, severe or even fatal (Konjetzny,³ Benedict⁵) pain, vomiting and loss of weight may suggest malignant disease.

From the Department of Radiology of the Presbyterian Hospital and of the College of Physicians and Surgeons of Columbia University.
Read before the Section on Radiology at the Eighty Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. Henning, N. Die Entzündung des Magens. Leipzig: Johann Ambrosius Barth, 1934. Ueber die Entzündung des Magens. Deut. che med. Wchnschr. 60: 1455 (Sept. 28) 1934.

2. Faber, Knud. Chronic Gastritis. Its Relation to Achylia and Ulcer. Lancet 2: 901 (Oct. 29) 1927.

3. Konjetzny, C. E. Die Entzündung des Magens. In Hencke, Friedrich und Hubersch, Otto. Handbuch der speziellen Pathologischen Anatomie und Histologie. Berlin: Julius Springer, 1928, vol. 4, part 2, p. 68. Die Deckepithelveränderungen des Magens chleimhaut bei akuter Gastritis. Virchows Arch. f. path. Anat. 275: 816, 1930. Zur Gastritisfrage. Wien. klin. Wchnschr. 46: 451 (April 14) 1933. Das Krankheitsbild der Gastro-duodenitis. Med. Klin. 32: 473 (April 9) 1937.

4. Forsell, C. Mechanism of Movement of Mucous Membrane of Digestive Tract. Am. J. Roentgenol. 10: 87 (Feb.) 1923.

5. Benedict, F. B. Chronic Gastritis. New England J. Med. 212: 405 (March 14) 1935.

DIAGNOSIS

The diagnosis of gastritis depends mainly on the gastroscopic and the x-ray examination. The experienced gastroscopists (Schindler,⁶ Henning¹, Schloss Ettinger and Pratt⁷ and others) agree that in many instances no change takes place in the mucous membrane which can be demonstrated by x-ray methods and that in such cases the disease can be detected only by gastroscopy. Henning warned particularly against the interpretation of wide exaggerated mucosal folds as "hypertrophic" gastritis.

There is ample evidence however that in many cases gastritis produces changes in gastric form and function, demonstrable by the barium sulfate meal which the radiologist must be prepared to recognize. A brief review of the normal movements of the lower end of the stomach is a necessary preliminary to a discussion of these changes.

THE MUCOUS MEMBRANE AND THE ANTRAL SYSTOLE

As the narrow peristaltic wave enters the antral region, its relaxing edge decreases and its contracting edge increases in speed closing off a portion of the lower end of the stomach and under normal conditions resulting usually in the expulsion of gastric contents. Then the wall relaxes promptly and the lumen returns to its normal width and contour. This is known as the antral systole. Observations on a dog's stomach made in this department⁸ after the placing of opaque markers beneath the serosa suggest that the antral systole is associated with a contraction of the longitudinal muscle toward the pylorus. Schindler,⁶ from gastroscopic observations, described shortening of the antrum with antral peristalsis.

The normal mucous membrane of the stomach is freely movable over the muscle. This is easily demonstrated by palpation of a fresh specimen by the separation of mucosa from muscle wall when the stomach is opened at necropsy and by the projection of the mucous membrane over the edge of the muscle when the living stomach is cut at operation. Forsell⁴ has shown that the formation of mucosal folds is the result of independent contraction of the muscularis mucosae. Obviously this independent movement is contingent on the mobility of the mucous membrane and an intact muscularis mucosae. In some cases the mucosal folds in the antrum run irregularly transverse

6. Schindler, Rudolf. Gastroscopic Observation Concerned with the Cross Anatomy of the Stomach. The Musculus Sphincter Antri. Observation of the Position of the Stomach, the Musculus Sphincter Antri. Digestion & Nutrition 3: 149 (May) 1931. Schindler, Rudolf, Ortmeier, Marie and Renhaw, J. F. Chronic Gastritis. J. A. M. A. 108: 465 (Feb. 6) 1937.

7. Schloss, Jacob, Ettinger, Alice and Pratt, J. H. Diagnosis of Diseases of the Stomach by X-ray and X-ray Relief Studies. Am. J. M. Sc. 103: 171 (Feb.) 1917.

8. Unpublished work, presented at a preliminary report before the Midwinter Conference of Eastern Radiological Society, New York, Jan. 20, 1937.

to the long axis of the stomach, and when the antral systole takes place they appear to change direction (fig 2) and run neatly parallel with the long axis. I have observed this phenomenon in the dog's stomach as well as in the human stomach (It is more easily seen in the small intestine.) For this change to occur, a movement of the mucous membrane in a cephalad direction must take place, thereby stretching it tightly beneath the muscular contractions. Otherwise, as the antrum closes off, the crisscross folds will be exaggerated, pushed down in a caudal direction and jammed toward the pylorus.

The failure of this stretching mechanism may account for the herniation of prepyloric mucosal folds through the pylorus. On a number of occasions I have observed under the fluoroscope a small polypoid elevation on the mucous membrane slide in a cephalad direction as the antrum closed off under a contraction. The change in the direction of the antral folds does not occur when there are moderately deep contractions but only when a deep constriction takes place by which gastric contents are expelled. Schindler⁶ observed through the gastroscope the formation of radial folds with antral peristalsis.

Whatever may be the mechanism, this movement of the mucous membrane seems to be part of the normal antral physiology. These clinical observations are to be checked by animal experiments.

GASTRITIS AND DISTURBANCES IN MOTILITY

Involvement of the deeper layers of the stomach by inflammation occurs frequently according to all the writers reporting histologic studies of gastritis. The movement of the mucous membrane may be hampered or prevented by infiltration or fibrosis of the muscularis

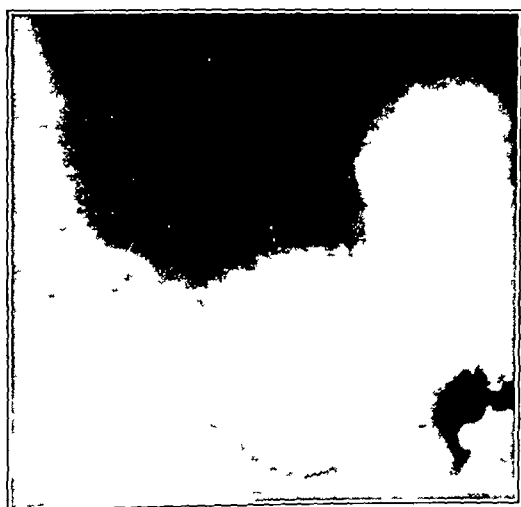


Fig 1 (case 1)—Antral gastritis with hypertrophied mucosal folds and hemorrhage. A doctor aged 49 had digestive symptoms for many years. A severe gastric hemorrhage reduced his hemoglobin content to 50 per cent. The x-ray examination disclosed an asymmetrical defect in the proximal end of the duodenal bulb suggesting a polyp with a heavy fold running through the pylorus and exaggerated folds along the margins of the bulb. At operation no polyp was found. The prepyloric mucosal folds were greatly exaggerated and could be easily pushed through the pylorus. On the edge of one of them was an erosion the size of a pin head, the only demonstrable site from which hemorrhage might have occurred. No duodenal ulcer was present.

mucosae and of the submucosa with adhesion of mucosa to muscle wall. This is apparently the explanation for the failure of the antral folds to flatten under pressure of the hand or of the constricting antral systole and for their herniation through the pylorus instead of retrac-

tion cephalad as gastric contents are expelled. Dunham⁹ noted the failure of the mucous membrane to protrude over the cut edge of the stomach wall in two cases, in which resection was done for hypertrophy of the pyloric muscle.

Edema of the mucosa is frequently noted by the gastroscopists and is often mentioned by the histolo-

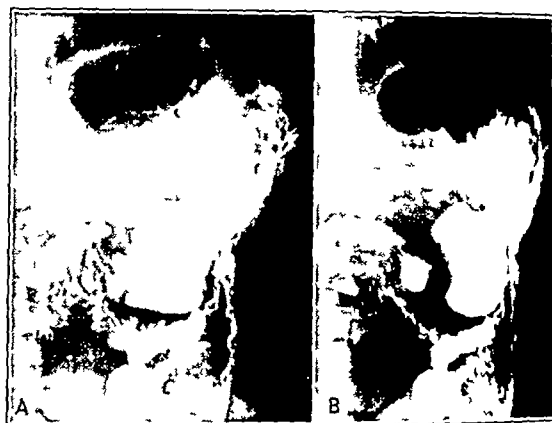


Fig 2—Change in direction of the mucosal folds with antral systole. A With the antrum relaxed the folds run transversely across the stomach. B With the antral systole the folds become much more slender and run parallel with the long axis of the stomach. Fluoroscopic observations suggest that the mucous membrane moves cephalad under the constriction.

gists. In one instance (case 2, fig 3) edema fluid was observed at operation to run from the cut edge of the stomach, in the microscopic section from the specimen large tissue spaces distended with amorphous pink-staining material were present in the submucosa. The edema and the inflammatory reaction in the submucosa and in the muscularis propria apparently affect the nerve plexuses. Holsti¹⁰ made the only serious attempt at a special study of the nerve elements in the gastric wall which is to be found in the literature. In specimens from patients with severe digestive symptoms but without peptic ulcer, he was able to demonstrate acute inflammatory changes around and within the ganglions, more marked in the myenteric than in Meissner's plexus. According to Alvarez¹¹ there is some evidence that the myenteric plexus is concerned with relaxation, damage to or removal of the plexuses causes a rise in tone sometimes so marked that rhythmic contraction becomes impossible. Thomas, Creder and Mogan¹² found evidence that an inhibitory reflex from the duodenum was routed through the vagus, presumably, therefore, damage to the vagus endings in the gastric wall by inflammation might interfere with the operation of this relaxing reflex.

Whatever may be the exact mechanism, in cases of well marked gastritis in which there can be no doubt about the diagnosis there are three major disturbances in motility. 1 Peristalsis may be very irregular in depth and in timing or may be absent for long periods; the waves seem stiff and fail to develop into antral systoles. 2 Prepyloric narrowing may be present, sometimes relatively slight and amounting merely to a

9 Dwight Kirby. Benign Hypertrophy of the Stomach and Liver. *Plastic Ann Surg* 85: 683 (May) 1927.

10 Holsti, Osten. On the Condition of the Intramural Ganglions in the Stomach in Cases of Gastritis. *Acta Med Scandinavica* 76: 316 (1911). On the Nature of the Pyloric Affections Which Simulate Ulcers. *Acta Med Scandinavica* 76: 343 (1911).

11 Alvarez, W. C. The Mechanics of the Digestive Tract. New York: Paul B. Hoeber Inc. 1928, chap. 3, p. 15.

12 Thomas, J. E., Creder, J. O., and Mogan, C. J. A Study of Reflexes Involving the Pyloric Sphincter and the Antrum and Their Role in Gastric Evacuation. *Am J Physiol* 108: 683 (June) 1934.

failure of the region to expand flexibly to the normal width after a contraction, but sometimes so marked that the antrum appears as a narrow channel (case 3, figs 4 and 5). In the narrowed prepyloric region the mucous membrane may be smooth and atrophic, increasing the similarity to annular infiltrating carcinoma or the folds may be exaggerated and even polypoid in appearance. Barium sulfate may be prevented by spasm from approaching the pylorus for some time. Pylorospasm may be present.

As a result of these disturbances the emptying of the stomach may be greatly delayed. A delay may occur in spite of a wide open pylorus. It is often difficult to expel barium sulfate by manual pressure at fluoroscopy.

The prepyloric narrowing is sometimes associated with mucosal erosions demonstrable only by the gastroscope or by the pathologist and sometimes with real penetrating peptic ulcer, usually located in the upper part of the narrowed area or definitely above it. It has been the custom to attribute the antral spasm to the ulcer. As the narrowing may be just as marked

all of nine specimens of hypertrophied pyloric muscle in the Department of Surgical Pathology of the Presbyterian Hospital, histologic evidence of gastritis was observed (Stout¹⁶). After an analysis of the material from the Institute of Pathology of Berlin University, Rossle¹⁷ concluded that this condition is secondary to inflammation in the pyloric region and is an "activity



Fig 4 (case 3)—Antral gastritis with marked spasm and hypertrophy of the pyloric muscle. A man aged 63 with a long history of infections of the respiratory tract and shortness of breath complained of abdominal distention, gas, epigastric pressure and loss of weight for six weeks. A examination elsewhere before admission to the Presbyterian Hospital disclosed persistent narrowing of the antrum which was interpreted as annular carcinoma. B reexamination after admission disclosed the same narrowing of the antrum. Because small mucosal folds persisted in the narrowed region and because on prolonged observation an occasional moderate expansion was seen, the narrowing was interpreted as due to spasm and not to carcinoma. The arrow points to a shallow ulcer crater not to be seen on the films taken at the previous examination. The patient died of pulmonary insufficiency due to severe bullous emphysema. At autopsy, benign hypertrophy of the pyloric muscle was observed (fig 5). A small shallow mucosal ulcer which did not extend into the submucosa was demonstrated on the lesser curvature.

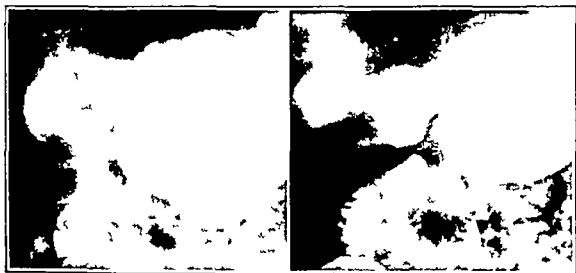


Fig 3 (case 2)—Antral gastritis with prepyloric spasm. The lower end of the stomach was resected because the pylorus and prepyloric walls were thickened making carcinoma difficult to rule out. Edema fluid was observed to run from the cut edge of the stomach and the wall then became less thick and stiff. The pathologic examination disclosed hypertrophy of the pyloric muscle, a mucosal erosion not visible on the films and histologic evidence of gastritis including marked edema of the submucosa. (Dr E. P. Pendergrass, University Hospital, Philadelphia gave permission to use this case.)

without as with an ulcer, it seems more logical to assume that the spasm is the result of the inflammation of the gastric wall, which is present in either case.

GASTRITIS AND HYPERTROPHY OF THE PYLORIC MUSCLE

Cruveilhier¹³ is credited with the first description of hypertrophy of the pyloric muscle. Figure 6 is a reproduction of his beautiful illustration of this condition, which shows the narrowing of the prepyloric region. His description of two cases of benign pyloric obstruction indicates that he was probably dealing with the condition under discussion.

Boas¹⁴ reported two cases in which his positive clinical diagnosis was confirmed at operation. He expressed the opinion that the hypertrophy of the pyloric muscle was the direct result of inflammation and used the term "stenosing gastritis." Serck-Hanussen¹⁵ found gastritis invariably present with hypertrophy of the pyloric muscle and concluded that the demonstration of the latter may be taken as positive evidence of gastritis. In

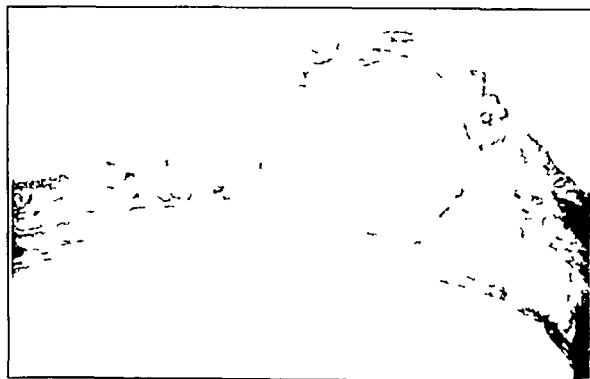


Fig 5 (case 3)—Section of hypertrophied pyloric muscle under low power. Sections of the interior wall of the stomach showed evidence of atrophy of the mucosa with fibrosis and marked infiltration of the deeper layers with lymphocytes. The muscularis mucosae was fibrotic and in places almost destroyed. The superficial part showed postmortem autolysis.

muscularis almost always associated with what they called "pyloro-antritis." Konjetzny³ (1936) stated that hypertrophy of the pyloric muscle results from "gastroduodentitis." According to the reports of many

13 Cruveilhier, Jean. *Retrecissement du plore*. Anatomie pathologique du corps humain. Paris: J. B. Baillière, 1835, vol. 12, p. 1, fig. 11.

14 Boas, J. Ueber hypertrophische Pylorusstenose (stenosierende Gastritis) und deren Behandlung. Arch. f. Verdauungskr. 4: 47, 1898.

15 Serck-Hanussen, Fin. Ueber das röntgenologische Bild der Pylorus-hypertrophie und präpylorischen Spasmen bei chronischer Gastritis und Ulcus ventriculi. Beitr. z. klin. Chir. 15: 464, 1933.

16 Stout, A. P. Personal communication to the author.

17 Rosle, R. Die Pylorushypertrophie des Erwachsenen. Schweiz. med. Wchnschr. 65: 174 (Feb. 23), 1935.

18 Ramond, Felix, and Jacquelin, Charles. Les duodeno-pyloro-antrites. Arch. d. mal. de l'app. digestif. 2: 618 (June), 1935.

others (Dwight,⁹ Fitzgerald,¹⁰ Kaufmann,¹¹ Wanke,¹² McNamee²² and Johnston²⁴) this condition, usually with thickening of the prepyloric muscle, seems invariably associated with inflammation. At the present time, therefore, the evidence strongly favors the opinion that gastritis is an important factor in the cause of hypertrophy of the pyloric muscle. In this connection, however, a question might be raised as to the significance of unilateral hypertrophy of the pylorus, which is not infrequently encountered.

The most important x-ray sign of hypertrophy of the pyloric muscle is elongation of the pyloric channel with preservation of the mucosal folds. When prepyloric spasm is also present, as it frequently is, the proximal limits of the channel may not be identified (case 3, fig 4), and the diagnosis may be only suspected.

DIFFERENTIAL DIAGNOSIS

The difficulty encountered by both radiologists and surgeons in differentiating antral gastritis and its complications from carcinoma is attested by numerous writers (Haudek,²⁴ Seick-Hannsen¹³ and others).

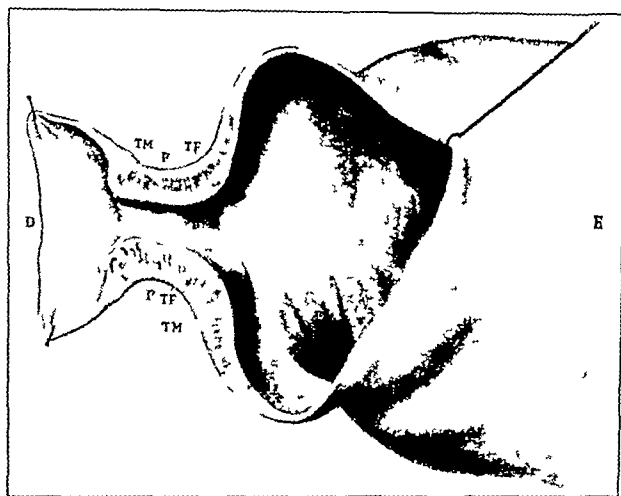


Fig. 6—Cruveilhier's illustration of benign narrowing of the pylorus.

Many gastric resections have been correctly done because the surgeon could not be sure that the palpable thickening of the antral wall was not due to early malignant disease. The difficulty is enhanced for the radiologist by the fact that infiltrating carcinoma does not necessarily obliterate completely contractions of the muscle. Furthermore carcinoma sometimes causes hypertrophy of the muscle.

The most important differential point is the demonstration by pressure methods (Berg¹⁵) or otherwise of mucosal folds in the narrowed area which should be obliterated by infiltrating carcinoma, sometimes these folds run through the pylorus into the duodenum.

However, carcinoma may infiltrate one wall leaving the mucosal folds intact on the other. If atrophic gastritis has caused a thinning of the mucous membrane and an absence of folds, the diagnosis becomes very difficult. Although the antrum or its prepyloric segment may remain persistently narrow, it may occasionally expand sufficiently to make it seem unlikely that an infiltrating lesion is present. A definite palpable mass corresponding under the fluoroscope to the antrum should be considered as evidence in favor of malignant disease.

Some writers advise repetition of the examination after the administration of atropine to physiologic effect, but I have never been much impressed by its efficacy. The importance of gastric lavage in the treatment of gastritis is emphasized by many observers. Boas¹⁴ recommended it in 1898. Repetition of the examination after several days of lavage, particularly if definite stasis is present, has been more helpful according to my experience.

Konjetzny³ (1936) expressed the opinion that demonstration of enlargement of the pyloric muscle should be considered an indication for operation because of the difficulty, even with biopsy of differentiating a benign from a malignant lesion.

SUMMARY

Antral gastritis is associated with a "prepyloric syndrome," as Kaufmann called it. This syndrome consists of (1) prepyloric narrowing of varying degrees due to spasm, (2) abnormal, stiff, irregular peristalsis, (3) sometimes exaggeration and sometimes diminution or absence of mucosal folds, (4) hypertrophy of the pyloric muscle, (5) shallow mucosal erosions which are not demonstrable by x-ray methods, or penetrating ulcer of the lesser curvature, (6) delay in emptying sometimes resulting in a twenty-four hour gastric residue. These signs may not all be present in any one case.

The available evidence suggests that the inflammatory reaction in the gastric wall is directly responsible for these physiologic disturbances and anatomic changes, with the possible exception of the penetrating ulcer. The mural nerve plexuses are apparently concerned in relaxing reflexes. It seems possible that the mechanism of the antral spasm is an effect of edema and inflammation on the ganglions.

The differential diagnosis from carcinoma may be difficult but depends largely on the persistence of mucosal folds in the involved region and, in doubtful cases, on repeated examination after treatment with relaxation of the prepyloric spasm. If doubt persists operation is advisable.

622 West 168th Street

19 Fitzgerald R. R. Chronic Follicular Gastritis. With a Report of Nine Cases. *Brit. J. Surg.* 19: 25 (July) 1931.

20 Kaufmann F. Magenkatarrh. *Neue deutsche Klin.* 7: 1 1931.

21 Wanke R. Zur Röntgendiagnostik und Therapie der hypertrophischen Pylorusstenose auf dem Boden der Chronischen Gastritis. *Zentralbl. f. Chir.* 59: 396 (April 2) 1932.

22 McNamee E. P. Pyloric Stenosis with Hypertrophy of the Pyloric Muscle in Adults. *Am. J. Roentgenol.* 29: 24 (Jan.) 1933.

23 Johnston C. R. K. Chronic Follicular Gastritis. *Surg. Gynec. & Obst.* 58: 614 (March) 1934.

24 Haudek M. Zur Deutung der Veränderung am präpylorischen Magenabschnitt. *Tortschr. a. d. Geb. d. Röntgenstrahlen* 29: 583 (April) 529 (May) 1929.

25 Berg H. H. Röntgenuntersuchungen am Innenrelief des Verdauungskanales. Ein Beitrag zur klinischen Röntgendiagnostik insbesondere von Entzündung, Geschwür und Krebs. ed. 2. Leipzig: Georg Thieme 1931.

Protection Demanded Against Noise—There has gradually developed in Great Britain a public consciousness of the insidious growth of the social evil of needless noise—a pernicious by-product attributable in great part to an increasing mechanized civilization. With this growing realization the nation is beginning to demand and to receive protection against the nuisance of outrageous noise whether generated by private or public bodies. It is looking for ways and means of minimizing excessive transport noises, particularly on the road and in the air and it is seeking to know why in modern houses and flats it should not be accorded adequate privacy against the natural, though sometimes unreasonable, noises of neighbors. Kave, G. W. C. *Noise and the Nation*. *Nature* Sept. 11 1937 p. 446.

SIMPLIFIED TECHNIC OF ONLAY
GRAFTS

FOR ALL UNUNITED FRACTURES IN
ACCEPTABLE POSITION

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AND
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Autogenous bone grafts have come to be generally employed in the treatment of ununited fractures with the exception of those of the neck of the femur and carpal navicular, where other methods are not infrequently used. In case of an ununited fracture of the shaft the grafted material may be made to serve as internal fixation apparatus, supplementary bone, osteogenic substance and stimulant to osteogenesis in those parts of the bone fragments which come in contact with it. Analysis of cases reveals that there is considerable variation in the necessity for any one of these functions according to the case at hand. Thus if the fragments are little atrophied and no bone has been lost there will be less necessity for supplementary bone than if atrophy is marked and if portions of cortex have been lost. Also if the cause of the nonunion is wide separation of fragments there will be less necessity for osteogenesis from the transplant than if there is nonunion with the fragments in good apposition because of failure of osteogenesis. And by the same criterion if the fragments are in good apposition and alignment there will be less necessity for the graft as an internal fixation apparatus than as an osteogenic agent and possibly as supplementary bone.

Hence the technic of bone grafting for ununited fracture cannot well be standardized to one procedure and should be varied somewhat according to the anatomic and physiologic conditions that are present. It should always be made as simple as is compatible with the necessities of the case.

If there is displacement and overriding or if there is loss of substance, reduction may necessitate freeing the fragments completely of soft parts for a variable distance back from the fracture line and resection of one or both ends may be necessary to obtain adequate contact. In such cases a graft should be used to fix the fragments in the corrected position. As a rule a relatively strong whole thickness onlay graft best serves the purpose. It may be anchored to the fragments by encircling ties of aluminum bronze or silver wire¹ by heavy catgut or kangaroo tendon or by screws made of beef bone or autogenous grafts according to the technic so well worked out by Henderson-Campbell and others.⁴ In addition, cancellous or osteoperiosteal grafts are placed along the fractured line or in defects of the cortex to assist in osteogenesis and in some cases to serve as supplementary bone.

On the whole the results of this type of operation have been very satisfactory. It is however a relatively extensive procedure and consequently carries some risk of infection and in case of large bones, especially the femur, of hemorrhage and shock. The lengthy denudation of fragment ends undoubtedly devitalizes some of the bone at times but this seldom interferes with union. Dead sterile bone has been encountered a few times at operation for nonunion where at a previous operation the ends were extensively denuded as in case 6 of this series. In one case of fractured femur 1½ inches at the end of the upper fragment was gray and bloodless five months after denudation and microscopic examination of the resected portion showed it to have undergone aseptic necrosis. This was no doubt a factor in the causation of nonunion. Resection of fragment ends sometimes shortens the bone to an objectionable extent. The introduction of foreign substances such as beet bone, kangaroo tendon and wire for anchorage of the graft increases slightly the risk of infection. Also in

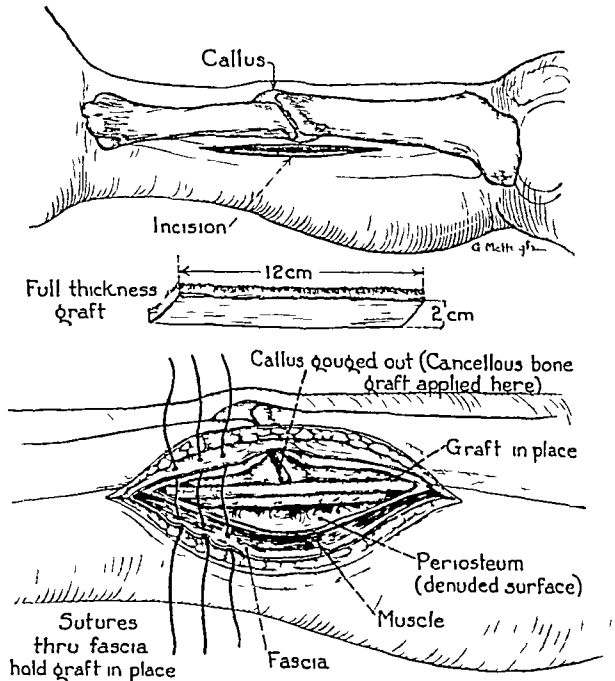


Fig 1—Technic for simplified onlay bone graft procedure. Above is shown an ununited fracture of the tibia as in case 1. Beneath this is an enlarged view of the bone graft and below its insertion.

the case of small bones and of extremely atrophic large bones in children the technical difficulty makes it inadvisable to attempt fixation with screws.

To lessen these risks a simpler operation has been used in cases of nonunion in which displacement is not marked and the position of fragments is such that if union were present the result would be acceptable. The bone of the fracture site is laid bare only on one side leaving the attachments on the other side to help maintain position. Cancellous and whole thickness onlay grafts are applied and held in place by suturing the soft parts about them. The grafts set up osteogenesis and serve as supplementary bone but do not immediately fix the fragments to any appreciable extent. The use of the method in a small number of cases has previously been reported. The success of the procedure

From the Department of Surgery, the University of Chicago.
Read before the Section on Orthopedic Surgery at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.
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is based largely on the fact that if a large onlay graft is applied across the fracture line in good contact union takes place between it and the fragment ends and then the intermediary callus ossifies, whether it is old or new.

The technic of the procedure is as follows:

1 The fracture is exposed through a 12 to 16 cm incision and the periosteum incised and reflected from about one half of the circumference of either fragment for an average length of from 5 to 7 cm.

2 An even surface is created for the reception of grafts by chiseling away any protruding callus or displaced cortex.

3 The intermediary callus is usually gouged or curetted out of the fracture line in most of its extent. While union occurred in all of the fourteen cases when this callus was left in, still it is considered best to remove it when feasible, as a newly formed callus should ossify more readily than an old one. The fragments are angulated somewhat to assist in the process, care being taken not to detach the bridge of callus and soft parts on the opposite side, which might permit of displacement. The bony callus closing the ends of the marrow cavity is not removed, as this has been found unnecessary. Any preexisting angulation can usually then be corrected.

4 One or sometimes two appropriately dimensioned whole thickness and several cancellous bone grafts are applied to the prepared surface and along the fracture line as indicated in figure 1. The grafts are taken usually from the healthy tibia, but in some instances from the longer end of the fractured bone or rarely from other bones. Endosteal surface is nearly always placed next to cortex of fragments and may be trimmed to fit. In case the graft is turned over in order to obtain a more accurate fit, its periosteum is stripped off



Fig 2 (case 1)—Preoperative view and results at intervals after insertion of onlay graft in ununited fracture of tibia. A before operation. B six weeks after operation. C and D five months after operation.

5 The grafts are held snugly in place in contact with the fragments by suturing the soft parts over them with interrupted sutures of 0 chromic catgut passing through the deep fascia. The subcutaneous tissues and skin are also closed with interrupted sutures.

6 A plaster-of-paris cast is applied and left on for from two to three months depending on the case.

If there is infection with osteomyelitis as a result of compounding or of previous operation, it is first neces-

sary to remove any dead bone and obtain wound healing. In most cases it is then advisable to wait from three to six months, depending on the severity and duration of the old infection, before operation for the nonunion. But, in case of infected fractures of the tibia when the wound is anterior and of long standing and the posterior part of the fracture either has



Fig 3 (case 2)—Preoperative view and results at intervals after insertion of onlay graft in ununited fracture of tibia. A and B before operation. C twelve weeks after operation. D and E twenty-two months after operation. X shows dead bone. Y shows transplanted bone.

been infected or has been free from infection for some time, a modified operation may be performed soon after closure of the anterior wound. It consists in exposure of the posterior surface of the tibia at the fracture level through a posteromesial incision as nearly opposite the old wound as possible and insertion of a heavy whole thickness bone graft about 10 cm in length, leaving the intermediary callus intact except where an elevation must be leveled off for contacting the graft. If the recent field of infection is avoided, it is possible to insert a bone graft without infection and secure bony union weeks or months before it would be safe to open the whole fracture field, freshen the fragment ends and tie or screw on a whole thickness graft. But the incidence of infection among the cases to be reported was greater in this small group than in the large group that was either never infected or had been healed for months, so that care must be exercised in the selection of cases and in restricting the operative procedure.

ANALYSIS OF CASES

Among the ninety-three cases of ununited fracture of the shaft of bone operated on in the University of Chicago Clinics during the past eight years, this procedure was employed in thirty-nine, or 42 per cent. Twenty-six of the thirty-nine patients were males and thirteen were females. Thirty-six were adults and three were children, two of whom had congenital pseudarthrosis of the tibia. The age of the patients ranged from 2 to 62 years, the average being 35 years. Eleven cases were due to automobile accidents, a similar number to falls, three to gunshot wounds and the rest to other causes. Most patients received immediate treatment elsewhere. In twelve cases there is a record of the fracture being compound and in ten cases infection was noted. Previous operation for nonunion had been performed in three cases. Of the thirty-nine cases of operation for a total of forty-two fractures, bony union followed in thirty-eight. The one failure was the result of a technical error, and a second onlay operation resulted in bony union. In six recently healed cases of infection of fractures of the tibia operation was

done by early insertion of the graft on the side opposite the old wound, with mild recurrence of the infection in two but with union of the fracture in all instances.

The distribution of the fractures in the skeleton is shown in the accompanying table.

USE OF THE OPERATION FOR FRACTURES OF VARIOUS BONES

Tibia—Ununited fracture of this bone was the one for which the operation was most frequently performed (fifteen times). It was also the fracture that before operation had been most frequently infected (eight times), that after operation in three cases became infected and that was the seat of the one nonunion. In one case of infection the whole thickness graft that became attached, although there was partial necrosis, was removed after the fracture united. In one instance both tibias were ununited and were united after grafting. In another case there was refracture three years later with nonunion, which again healed after grafting.

CASE 1—L. P., a man, aged 25 illustrates the successful use of the method in a case in which a compound fracture of one year's standing had been treated early with a steel plate resulting in slight infection and nonunion. The plate was removed six months before and some dead bone five months before. The wound had been healed for four months. A whole thickness graft from the other tibia was applied posteromedially and an osteoperiosteal graft on either side of it at the fracture line after some of the adjacent intermediary callus had been removed. There was primary healing of the wound. Figure 2 *A* and *B* shows the roentgenographic appearance before and six weeks after operation and *C* and *D* the healing five months after operation. Note the ossification of the old intermediary callus anteriorly in *C*, which was not disturbed at operation.

Case 2 illustrates the successful use of the method following infection and sequestrectomy when the graft

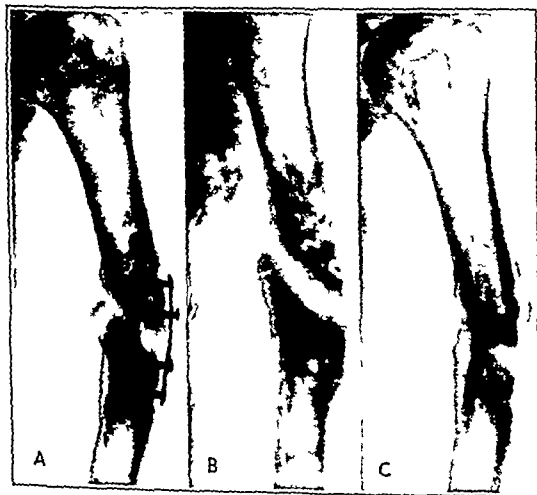


Fig 4 (case 3)—Preoperative view and results at intervals after insertion of onlay graft in ununited fracture of humerus. *A* before operation. *B* one week after operation. *C* ten months after operation.

was inserted posteriorly before the anterior sinus was healed.

CASE 2—H. C., a man aged 45, was admitted July 31, 1932 with an infected and ununited compound fracture of the lower third of the tibia of four months' standing (fig 3 *A* and *B*). Two cm. of the anterior cortex of the upper fragment was dead and partly sequestered and one month later it was removed through the anterior wound. Five weeks later when the wound had become very small but was not yet healed the

posterior surface of the tibia was laid bare through a posteromedial incision and an onlay graft was applied and held in place by suturing the soft parts. Intermediary callus was not disturbed. Three months later the fracture was healed. A small sinus persisted anteriorly for some time but walking was resumed gradually and the patient returned to work. Figure 3 shows the result (*C*) twelve weeks and (*D* and *E*) twenty-two months after operation.

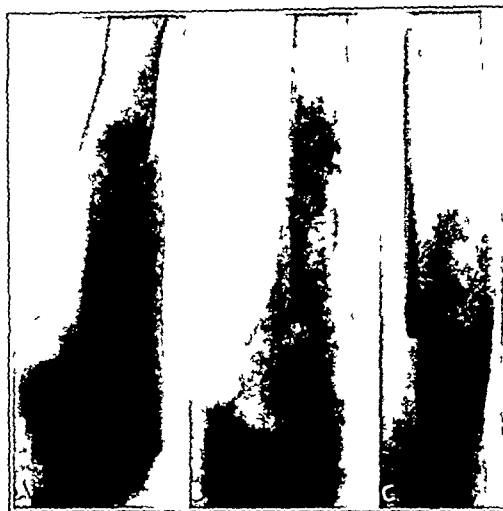


Fig 5 (case 4)—*A* preoperative view and *B* and *C* result six months after insertion of onlay graft in ununited fracture of humerus.

One fracture of the upper end of the tibia failed to unite as a result of the use of two short grafts that were applied without adequate leveling of surfaces, so that they were not in contact with the lower fragment.

Humerus—The ends of the fragments are usually in contact, and angulation if present can usually be corrected after removal of intermediary callus, so that this procedure is relatively often applicable to the

Distribution of Thirty-Nine Cases of Ununited Fracture Treated by Simplified Onlay Graft

Bone Involved	Number of Cases	Union After First Operation	Union After Second Operation
1 Tibia	15	14	1
2 Humerus	8	8	
3 Forearm	8	8	
Radius	(2)	(2)	
Ulna	(3)	(3)	
Radius and ulna	(3)	(3)	
4 Mandible	3	3	
5 Shaft of femur	2	2	
6 Clavicle	2	2	
7 Ilium	1	1	
Total	39	35	1

humerus. All eight cases remained clean and union occurred promptly after one operation. In the lower half the incision should be along the course of the radial nerve and the graft should usually be inserted anterior and mesial to it. Near the elbow the graft should not be too thick, as it may interfere with motion. Cases 3 and 4 are illustrative.

CASE 3—B. C., a man aged 35, fractured the left humerus fourteen months before admission. Nonunion persisted after a clean metal plating operation four months after the injury. The fracture site was exposed, the screws and plates were removed, the intermediary callus was gouged out and two tibial whole thickness and several cancellous grafts were inserted and the soft parts sutured. The body and arm were

in a cast for ten weeks, resulting in bony union. Figure 4 shows the condition (A) before, (B) one week and (C) ten months after operation.

CASE 4—J. R., a man, aged 59, fractured the left humerus ten months before admission. Open reduction and metal plating one week after injury was followed by nonunion. The plate was removed after four months. The arm had been immobilized since and there was marked stiffness and bone

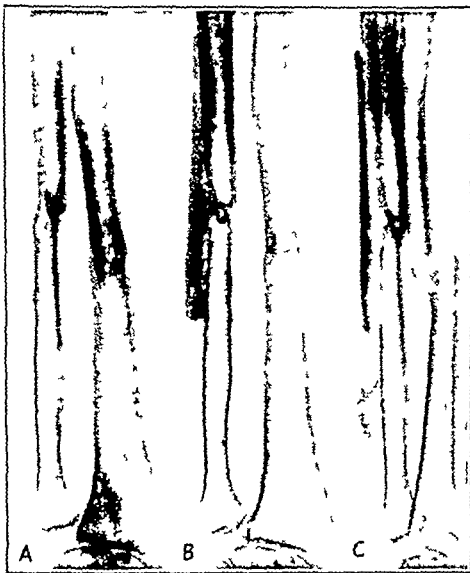


Fig. 6 (case 5)—A, preoperative view and B and C, result twelve weeks after insertion of onlay graft in ununited fracture of ulna.

atrophy. Through an anterolateral incision the fracture was exposed, the callus gouged out anteriorly and a whole thickness tibial graft applied in front with cancellous grafts at the fracture line. Union occurred during ten weeks of immobilization in a body and arm cast. Figure 5 shows the condition (A) before and (B and C) six months after operation.

This was an ideal case for use of the procedure, since the apposition and alignment were excellent and there was no surface irregularity to be chiseled off.

Bones of the Forearm—The method is well suited to nonunion of the shaft of the radius or ulna separately, as the fragments are often in good position but not so for nonunion of the two bones at the same level. In the latter group the fragments are likely to be displaced and angulated and the two bones approximated. Bony union followed operation promptly in the three cases in which both bones were ununited, but two cases were wrongly selected with bones too nearly approximated and an interosseous bony bridge formed which later had to be excised. Complete freeing of fragments with alignment and fixation by grafts tied or screwed to fragments is indicated in such cases as in that way the bones are kept apart.

Case 5 shows the simplicity of the procedure when applied to the ulna.

CASE 5—S. M., a man, aged 29, fractured both bones of the forearm ten months before admission. The ulna was cut down on a week later and the fracture ends were tied with catgut, but nonunion followed although the displaced radial fragments which were not exposed united. At operation ten months after injury the posterior surface of fragments was bared, intermediary callus was gouged out, cancellous and whole thickness onlay grafts were applied and soft parts were closed over them. Bony union took place during eight weeks of immobilization in a cast. Figure 6 shows the lesion (A) ten months after injury and (B and C) twelve weeks after operation.

That the operation is suitable for more complicated situations is illustrated by the following case.

CASE 6—C. Z., aged 37 years, fractured the ulna and located the head of the radius two and a half years before admission. Three months after injury the radial head was removed and the ulnar fragments were fixed by means of an ivory peg. Nonunion persisted, and nine months later a tibial bone graft was applied and fixed with ivory screws. This failing, seven months later the fragments were anchored together with wires, but nonunion persisted. At operation the back of the ulna was exposed and the wires were removed. An area of dead bone was found at the end of the proximal fragment. Intermediary callus was curetted out, a heavy whole thickness tibial graft was applied, the wound was closed and the arm and forearm were immobilized in a cast. Bony union resulted after eleven weeks. Figure 7 shows the conditions present (A) on admission and (B) six months after operation.

Grafts for use in the radius and ulna should not be too bulky and should be cut from the upper end of the tibia where the cortex is thin.

Mandible—The operation is better suited to the mandible than any other procedure, since anchorage of a graft with ties or screws is much more complicated. Through an incision along its lower border, the medial surface of the mandible is bared and the graft applied. In two cases intermediary callus was removed and in one it was not disturbed. The graft from the thin upper cortex of the tibia is held snugly in place by the sutured soft parts. The upper and lower teeth are wired together for from six to eight weeks. Defects of the mandible have also been repaired by applying two whole thickness grafts in a similar way.

Femur—Ununited fractures of the femur rarely lend themselves to this procedure since displacement, overriding and angulation usually call for reduction and utilization of graft as an internal fixation apparatus. In the two suitable cases it worked out well, one being a transverse fracture, previously reported, in which none of the intermediary callus was removed.

Clavicle—The whole thickness graft should again be thin and the surfaces flattened to give good contact in order not to create a permanent bony enlargement.

Fractures of the ischium or other parts of the innominate bone very rarely fail to unite. The one case in this series was a part of the picture of multiple fractures of the pelvis four months previously and the fragments were widely separated. Three tibial grafts were onlaid and bony union resulted.



Fig. 7 (case 6)—A, preoperative view and B, six months after insertion of onlay graft in ununited fracture of ulna.

SUMMARY AND CONCLUSIONS

Ununited fracture with the fragments in acceptable position has been caused to unite in thirty-eight of thirty-nine patients at the first attempt, and in the one case of failure at the second attempt, by exposure of fragments on one side and the application of whole thickness and cancellous bone grafts, which were held in place by the overlying soft parts sutured about them. The intermediary callus may or may not be gouged out according to the case but union occurred in all fourteen cases in which it was left in. The attached soft parts on the opposite side serve to return the position of fragments and displacement did not occur subsequently within the plaster cast. The operation is shorter and simpler than that in which fragment ends are freed, aligned and fixed by a graft tied or screwed to them. The results demonstrate that it is unnecessary to remove the new bone closing the medullary cavity of the ends of the fragments. In selected cases of infected fractures of the tibia with nonunion, operation has been successfully done soon after healing by incising and implanting the graft in contact with the fragments through a clean field on the side opposite the scar, thereby saving much time. But infection did recur in two cases, so that they should be selected with care.

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ABSTRACT OF DISCUSSION

DR WILLIS C CAMPBELL, Memphis, Tenn. The merits of any treatment must be estimated by the percentage of end results obtained. I have no doubt that by many operative procedures as the employment of chip grafts, union can be secured in a certain proportion of cases but the procedure that will secure union in the highest percentage is the one that warrants attention. I believe in the onlay graft and have been an exponent of that graft. There are two factors that are essential to obtaining union: first absolute fixation; second, promotion of osteogenesis by the use of autogenous bone. This is best accomplished by a full thickness cortical graft pegged in place by autogenous nails supplemented by spongy bone packed around the ends of the fragments. Firm fixation is thus secured plus the introduction of autogenous material capable of osteogenesis. It is necessary to distinguish in all cases between delayed union and nonunion. In delayed union one can often secure good results by conservative measures even by drilling holes in fragments but in nonunion of long standing the problem is more difficult. When a Lane plate is applied simple removal of the plate is frequently quite sufficient to induce union as the plate itself may be causing the nonunion. I prefer to delay operative procedures for some time after removal of the plate to see what will happen before I employ any type of bone graft. This simple graft may be an excellent measure to use in this type of case. The question also arises as to the length of time in which union is to be secured. I find that after absolute fixation which is secured at the time of the operation union is obtained more rapidly and that apparatus can be dispensed with at a much earlier date than by less efficient methods. In fact in one case of fracture of the bones of the forearm the patient left the hospital within twenty-four hours and took off his cast at the end of three or four weeks but he obtained an excellent union with a perfect result. That of course was unusual. However I feel from my own experience in using all types of grafts that to produce osteogenesis alone is not sufficient. I did not have the same percentage of good results in a large number of cases that I am now able to secure by conforming to the two principles of absolute fixation and the promotion of osteogenesis by autogenous grafts and the use of spongy bone.

DR W. K. WEST, Oklahoma City. While I have had no experience with the authors' method as described in this paper

it seems to me that it would be better to obtain stability as well as osteogenesis at the time the operative technic is carried out. However, it must be borne in mind that the pegging technic is not easy and is impossible unless adequate equipment and assistance is available. Therefore I can see that there would be circumstances in which the technic described would be the one of choice. For reasons of comparison, I wish to illustrate a few cases of nonunion in which the Campbell method of onlay graft was used when there was no callus formation or when there was marked defect in the bone continuity, also to illustrate a second method in cases in which there was an attempt at union but for some reason, the fracture did not unite solidly. The Campbell technic consists in using autogenous bone pegs in connection with massive onlay grafts. The advantage of this method over any bone graft procedure in which osteogenesis is paramount is that one not only obtains fresh bone for healing of the fracture but at the same time maintains a very rigid stability. The second method is far simpler than the Campbell method or the method described by Drs Harkins and Phenister. A simple sliding inlay graft is used maintained by two small stainless steel wires which are easily removed with the use of a local anesthetic after union takes place. The sliding graft is especially indicated in cases in which apposition of the bone fragments is satisfactory or callus formation has begun. Good results can be expected by using this method thereby avoiding the necessity of going into the tibia for the graft. From a medicolegal standpoint it is important to know that additional compensation is applied for in many industrial cases owing to the fact that there is a permanent scar on the leg resulting from removal of the bone graft.

DR MELVIN S. HENDERSON, Rochester, Minn. The technic of bone grafting is not standardized and properly never should be completely standardized. The particular method that is to be used must fit the case and not the case fit the method. No doubt certain types of ununited fracture can be quite conveniently treated by the method advanced by Drs Harkins and Phenister. However, I think that if it were used in a routine manner in a large series of cases it would be found that there would be a fair proportion of failures. The authors have told us that it is not to be used in a routine manner. There are certain essential points about bone grafting that are definitely pertinent to this discussion. The technic displayed in the exhibit by my associates and myself in the orthopedic section is based on an experience over a long term of years in dealing with 591 patients with ununited fractures in whom over 600 bone grafting operations were performed. We have evolved a certain technic which we are using today and which is giving us better results than we have obtained in the past. The points we might call essential are (1) that the graft must be 'massive' using the term massive to emphasize that the graft must be large. Willis Campbell has coined the word onlay. I think the two might be combined and that it might be called the massive onlay graft. Secondly, the very important factor in obtaining union in these obstinate cases is the use of small pieces of cancellous bone packing them about the fracture line and the line of contact of the graft with the fragments. I learned this from Willis Campbell's bone block operation wherein he showed that a pile of small cancellous bone chips placed on the os calcis just in front of the insertion of the achilles tendon would lead to the formation of a column of bone that would furnish the block and prevent foot drop in paralytic flail feet. Thirdly, the fracture itself should be exposed, the eburnated bone ends removed and the medullary cavities in each fragment opened up. Fourthly, the graft should be held firmly to the fragments by some form of internal fixation either autogenous pegs or beef-bone screws or in certain difficult cases by metal bands or metal screws. Fifthly, external fixation must be provided also. If one does not use external fixation in the way of properly applied plaster-of-paris casts one courts disaster. The reason for this is that there comes a weak period in the growing and healing period of a fracture and graft usually at about the end of the sixth or seventh week. The graft is weakened by some absorption and

enough new bone has not as yet formed to give strength. If external fixation is inadequate at that time, the graft will in all probability break.

DR ELVEN J BERKHEISER, Chicago In the June issue of *Surgery, Gynecology and Obstetrics* I reported several cases of nonunion of the clavicle in which I employed the same technic and obtained bony union not only in the cases in which the position of the fragments was acceptable but also in the cases in which the position was not acceptable in that the inner end of the outer fragment had to be freed and elevated because of its pressure on the brachial plexus, and in a third group in which there was loss of substance of the bone with a gap of more than 2 inches between the ends of the fragments. In fractures of the tibia with nonunion I prefer and have used a more simple technic than that demonstrated by Dr Jepson at the Academy of Orthopedic Surgery. It has been used and bony union has been obtained in about twenty cases. This procedure has failed in a case of congenital pseudarthrosis in which operation was performed when the patient was too young. The simplified procedure consists of exposure of the tibia over the medial aspect, cutting the reversible graft longer in one fragment than the other with a single circular saw so inclined that the graft shall be wedged or in keystone shape in cross section. This graft consists of all layers—endosteum, medullary, cortex, cambium and periosteal layers. I am prejudiced in favor of the use of the attached periosteum, although there is some difference of opinion about this point. Then the graft is reversed and driven in or countersunk. In doing this the receiving fragments are sprung outward and grasp the graft, holding it securely in position.

DR EDWIN W RYERSON, Chicago The difference between this operation and most of the other operations for ununited fractures is that it does not attempt to fix firmly the graft, and it is perfectly evident, from the thirty-nine cases that were shown, that one does not have to secure absolute immobilization. Therefore the Harkins-Phemister method resolves itself into one of stimulation of osteogenesis. I don't say osteogenesis, because in the Bible we say Genesis, Exodus, Leviticus and so on. There are certain fractures which need only some new bone as an osteogenic stimulus. There are other fractures which need more than that, and I think it is a pretty good principle when one is operating on an ununited fracture to secure just as much immobilization by the transplant as one can. On the other hand, to use the bone screws whether beef bone or autogenous bone screws, is a much more difficult operation to perform and involves a little more risk to the patient from shock, so if one thinks one has a case in which simply some osteogenic bone needs to be applied one should use this simple method. If there is no way of deciding, possibly, which way one ought to think the fixation method should be used.

DR DALLAS B PHEMISTER Chicago The procedure was used in only 42 per cent of the cases of ununited fracture of the shaft so that no attempt has been made to apply it to unsuitable cases. In the ordinary case of ununited fracture, the intermediary callus is unossified and the ends of the marrow canal of the fragments are closed by a layer of new bone. It is usually considered necessary to get rid of the intermediary callus and the bone closing the fragment ends before the application of the bone graft. Our experience with these thirty-nine cases has shown that if a long heavy whole thickness graft is placed to bridge the fracture line and spongy grafts are applied at the fracture site, union of the fracture will follow whether or not the intermediary callus and bone closing the ends of the medullary canal are removed. It also shows that it is not necessary to fasten the heavy graft to the fragment ends if they are held together by soft parts on the side opposite the graft. The sutured soft parts hold it in place. Osteogenesis takes place from the ends of the fragments and from the graft where they come in contact as well as from the cancellous grafts, and bony union follows between graft and fragments. Accompanying this there is ossification of the intermediary callus. If this procedure is followed advisedly, nearly one half of the patients with ununited fracture of the shaft will be spared a more extensive operation.

EXOPHTHALMOS COMPLICATING IRRADIATION

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In the discussion of Dr Frederick T Hill's paper, "The Management of Malignant Disease in a Small Hospital," read before the Eastern Section of the American Laryngological, Rhinological and Otolaryngological Society last January, Dr Perry G Goldsmith reported a case of malignant nasal sinus disease in which exophthalmos developed after irradiation. In this discussion, Dr Goldsmith emphasized our lack of knowledge concerning the pathology, the course and the prognosis of exophthalmos occurring as a result of irradiation.

The literature is indeed scanty. Although Newman in 1926 reported the loss of eleven eyes in ninety-seven cases of malignant disease of the nasal sinuses, he did not specifically say that they were lost as the result of destructive changes secondary to irradiation. Ohngren



Fig 1—Three vessels are present in the midportion of this section. The artery centrally shows almost complete obliteration of its lumen with marked hyaline thickening of the fibrous tissue of its wall. There is slight lymphocytic infiltration. Note the degeneration of the elastica. On each side are venae comites that to the left showing a change similar to the change in the artery that to the right showing an irregular outline of its wall and its lumen only slightly narrowed still containing red cells. Note the hyalinization of the collagen the diffuse staining property giving a rather fuzzy appearance. Hyaline fibroblasts and lymphocytes are scattered through the tissue. Just beneath the artery is a moderate-sized telangiectatic vessel filled with red cells.

discussed injuries to the eye following his combined electrosurgical operation, both with and without irradiation, and he attempted to classify these injuries into two groups: first, those which were due to excessive heat generated at the time of the operation, and second, changes in the eye that appear late, as the result of infection.

This paper is based on five cases in which exophthalmos developed as a result of the treatment of malignant disease of the nasal sinuses. In three of these cases the condition occurred after operation and irradiation. In two it followed irradiation without operation.

Read before the Section on Laryngology, Otolaryngology and Rhinology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.
1. New, Gordon B. Malignant Tumors of the Antrum of the Maxilla. *Arch. Otolaryng.* 4: 201 (Sept.) 1926.
2. Ohngren, L. George. Malignant Tumors of the Maxilla. *Acta Otolaryng. supp.* 19: 1933.

In the treatment of malignant tumors of the nasal sinuses I have followed the reasoning of Barnes,³ and his words are worthy of repetition. He wrote

It is obvious that the first principles of the operative treatment of malignant disease are violated when a tumor is removed, not only without a fair margin of normal tissue but also by a crushing operation which amounts to a curettage. No better method could possibly be imagined for producing local implan-



Fig 2—Radiation reaction in the orbit. In the center of the section is an arteriole completely obliterated by a hyaline thickening of the connective tissue elements of its wall. There is slight proliferation of the endothelium. Much of the connective tissue is hyalinized. Some of the fibroblasts are swollen and distorted. There is a rather diffuse lymphocytic infiltration.

tations and setting up distant metastases. Yet, on account of the bony surroundings of the tumors, which separate them from the brain and from the eye, no other course is open, except in case of antral involvement only. It is for this reason that immediate postoperative radiation is used.

IRRADIATION

Postoperative irradiation has consisted of platinum tubes of radon of a strength of approximately 100 mg placed in the center of the gauze packing at the close

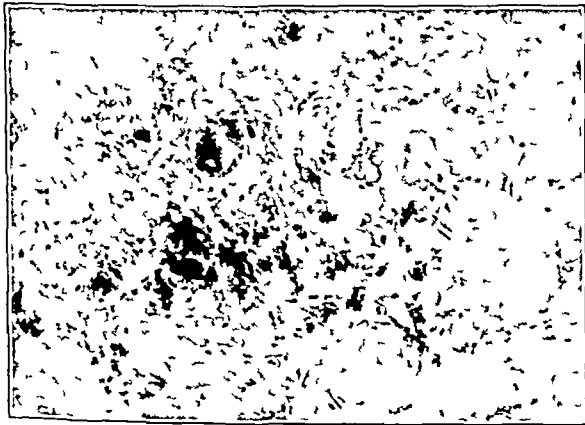


Fig 3—The right hand portion of the section shows marked hyalinization of the connective tissue, relatively acellular, and one or two small telangiectatic vessels. The left hand portion shows similar hyalinization of the collagen and a heavier lymphocytic infiltration, the cells being somewhat thickened. The vessels are dilated, containing red cells.

of the operation. This packing gives an additional screening of at least 15 cm of gauze. The radium is left in place for a total dose of from 2,000 to 4,000 mg hours. This is the method advocated by Barnes. Recently I have increased the screening by the addi-

tion of 1 mm of lead. In two patients exophthalmos developed even with this additional protection.

For patients with inoperable disease of the sinuses I have, at times, tried interstitial irradiation. By patients with inoperable disease I mean those whose physical condition will not stand operation and whose malignant growth has broken beyond the confines of the sinuses. The interstitial irradiation is given by means of radon in platinum needles of a wall thickness of 0.5 mm and totaling about 100 mg. The needles are inserted into the tumor through a stab incision of the buccal mucosa of the canine fossae and are left in place for a total dose of from 2,000 to 3,000 mg hours. In two patients exophthalmos developed after this method of treatment.

SYMPTOMS AND COURSE

Following irradiation, exophthalmos may occur early, even within the first twenty-four hours, or it may be delayed, coming on weeks after treatment. As the protrusion of the eyes develops there is conjunctival chemosis at first, excessive lacrimation, then exposure



Fig 4—Transition cell carcinoma involving the left ethmoid and antrum. A modified Moore incision was made and exenteration of the tumor done with electrocoagulation. Radiation consisted of 4 platinum needles totaling 75 mg of radium. Protection consisted of 1 mm of lead and 1 cm of gauze. Exophthalmos developed within twelve hours so that their irradiation was terminated at 2,000 mg hours. Vision and the cornea remained good and the exophthalmos gradually subsided in five months.

and drying of the cornea. Orbital pain is constant and severe. The vision may remain good. With each case the problem of orbital extension of malignant disease must be weighed. As long as the cornea remains healthy, as long as there are normal vision and no limitation of ocular movements, conservative treatment should be employed. When degenerative changes have taken place, such as corneal ulceration and infection, loss of vision or limitation of ocular movements, orbital exenteration is necessary. It is necessary not only to relieve the pain but to eliminate the possibility of orbital extension of the malignant disease.

PATHOLOGY

The effects of irradiation on tissues have been studied by many pathologists, but the work of Wollbach⁴ on the skin remains classic. I have been unable to find

³ Barnes, Harry A. Malignant Tumors of the Nasal Sinuses. Arch Otolaryng 6: 123 (Aug.) 1927.

⁴ Wollbach, S. B. Pathological Histology of Chronic N. Ray. Dermatitis and Early N. Ray. Carcinoma. J. M. Research 21: 415, 1909.

a previous study of the pathologic changes in exophthalmos following irradiation. I expected them to be the changes of edema and hypertrophy of connective tissue.

From study of the sections removed at four exenterations the pathologic changes due to irradiation on these structures may be described as those due to (1) the effect on the cells, (2) that on the intercellular substance and (3) that on the blood vessels.

In the resting cell the early effect of irradiation is swelling of the cell due to intercellular edema. Vacuoles then appear in the cell protoplasm. If the reaction is prolonged there is degeneration of the mitochondria and of the resting nucleus. If the cell is a secretory cell, degeneration of the Golgi apparatus may take place. In the actively dividing cell, irradiation may arrest mitosis during the early prophase stage. If the division has progressed beyond prophase the mitosis usually goes on to completion. The chromosomes may show varying degrees of degeneration.

Irradiation affects the intercellular substances by causing degeneration of the elastic fibers and by swelling or necrosis of the collagen. The late or delayed reaction may be hyalinization of the collagen or delayed necrosis of the collagen.

The effects on the vessels are both immediate and late. The endothelium of the vessel walls becomes

due to (1) degeneration of the cement substance, (2) degeneration of the Rouget cells or (3) occlusion changes in the deeper veins due to back pressure.

CONCLUSIONS

1 Exophthalmos may result from irradiation by accepted methods. It may come on within twenty-four hours or its appearance may be delayed.



Fig 6—Epidermoid carcinoma grade 3 of the left antrum and ethmoid breaking through the front face of the antrum. The patient in poor physical condition. Interstitial irradiation 2,000 mg. hours was given. Exophthalmos developed four weeks after treatment, requiring orbital exenteration due to limitation of motion and pus in the anterior chamber.



Fig 5—Lymphoblastoma of the antrum and ethmoid which had broken through the front face of the antrum. Interstitial irradiation of 4,000 mg. hours was done. Three months later edema of the eyelid began and in two weeks it had progressed to definite exophthalmos with limitation of ocular movements in all directions. There was no tumor involvement of the orbit.

degenerated and produces varying degrees of thrombosis. The late effects are fibrosis of the vessel wall with proliferation of the injured endothelium, which may lead to gradual occlusion of the vessel. Telangiectasis may occur in varying degrees and may be

- 2 Pain is constant and severe.
- 3 As long as degenerative changes in the eyes do not take place conservative measures may be adopted.
- 4 Operative measures to protect the eye have been of little value.
- 5 With degenerative changes in the eyes orbital exenteration is necessary not only to relieve the pain but to eliminate the possibility of orbital extension of the malignant disease.
- 6 The pathologic process is essentially that of degeneration and vessel thrombosis.

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ABSTRACT OF DISCUSSION

DR. ALGERNON B. REFSE, New York. Dr. Schall states that some of his cases of exophthalmos appeared within twenty-four hours after irradiation while others appeared within five to six weeks. Although I have not observed this immediate exophthalmos following irradiation a possible explanation seems to be that the irradiation caused necrosis of the tumor and the toxic effect of this produced an inflammatory reaction in the adjacent loose vascular tissue of the orbit. The cause of exophthalmos that Dr. Schall observed from five to

weeks after irradiation must represent an extension of the new growth into the orbit or, possibly in rare instances, an infection, particularly in cases in which the antrum is the seat of the lesion. In the Head and Neck Clinic of the Memorial Hospital in the past five years I have observed eleven cases of exophthalmos complicating cancer of the nasal sinuses and thirteen cases complicating cancer of the nasopharynx. All of these patients had received radiation. In two cases which involved the antrum, the exophthalmos seemed to be secondary to an infection. In all the other cases it was thought that it was due to an extension of the new growth into the orbit. This was based on the fact that in some instances a mass was palpable in the orbit, in some there were signs of peripheral involvement of the nerves traversing the orbit, in some a papilledema and in some an indentation of the scleral wall. I have observed no instances in which I felt that the radiation per se was a significant factor in the exophthalmos. If radiation in moderate doses, as given in Dr Schall's cases were a cause of exophthalmos, exophthalmos would frequently be seen in patients in whom fractionated doses of 6,000 and 7,000 roentgens are given to portals which include the orbit and which produce a blistering dermatitis of the eyelids and adnexa and in some instances a necrosis of a portion of the cornea. It is significant that exophthalmos is not seen as a feature in such instances.

DR JOSEPH C BECK, Chicago. One must always differentiate in these cases between whether the complication is due to the action of the x-rays and radium on the tissues or whether other factors may have contributed such as trauma following operation. Medicaments, such as caustics, may have been applied locally. Nevertheless, if one can show, in these otherwise fatal cases, that the x-rays and radium cured the condition, one can ignore the complication of exophthalmos. My contribution to the discussion of this paper lies in recording my observation in malignant disease about the head and neck treated by x-rays and radium alone or combined with surgical procedures: the cold knife, the endothermic knife, the actual cautery, and caustics such as zinc chloride being used. I have yet to observe one case of any degree of exophthalmos following irradiation with either x-rays or radium. On the other hand, I have seen exophthalmos develop when irradiation was done postoperatively. In these cases I have always been satisfied that the exophthalmos was due to the extensive and severe reaction from surgical intervention with its subsequent venous and lymphatic block. Having been present at many radical operations for malignant disease of the sinuses, especially by the thermic method (G B New, Rochester, Minn. and G E Ohngren, Stockholm, Sweden), as well as having used similar methods myself, I can visualize how the extensive heat could radiate far beyond the point of application and thus block the return circulation. Reference was made in the paper to a small tumor of the sinuses reported by Goldsmith. This was treated with radiation, and exophthalmos followed. It is necessary to know by exact measurements with an exophthalmometer the degree of exophthalmos before and after treatment. One should also know the technic employed. Permit me to suggest that experimental work be done on animals by means of excessive irradiation. It will be granted that the anatomy is comparative and that the pathologic changes will not be comparable to that of the cases here recorded. I am connected with a large public institution where several hundred cases of malignant growths are treated including those of the sinuses. Much irradiation from x-rays and radium is used by all types of application. From the report of the chief of the tumor clinic, as well as from my own observation, exophthalmos has not been present very often as the result of irradiation.

DR. LEROY A SCHALL, Boston. I do not have much more to say except to thank those who discussed the paper. In reply to Dr Reese I would say that there was no tumor involvement of any of the orbits which required exenteration. Exenteration was done in four cases. One patient recovered without the necessity of exenteration. It may be that I chose a minute subject for presentation but as a surgeon I am convinced that the condition causes considerable worry and that little help will be obtained from any one else when this type of case is handled.

RENAL LESIONS DUE TO DIETHYLENE GLYCOL

A PRELIMINARY REPORT

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A report¹ of several fatalities following the use of an "elixir" of sulfanilamide made with diethylene glycol prompts this preliminary abstract of a portion of the work in progress on the pharmacology and pathology of the glycols and related chemicals. Only two studies of the toxicity of diethylene glycol appear in the literature. Von Oettingen and Jirouch² found, using four mice that the minimum lethal dose was approximately 5 cc per kilogram of body weight when given



Fig. 1.—Kidney of rat receiving 5 per cent diethylene glycol in drinking water for seventy-two hours. Vacuolization and swelling of epithelium of convoluted tubules. Distention of glomerular spaces. $\times 110$

subcutaneously. Haag and Ambrose³ reported that the ingestion of the glycol in concentrations of 3 per cent and 10 per cent in drinking water was rapidly fatal to rats and that the minimum fatal dose for rabbits is 2 cc intravenously. The vital organs of these animals were found to be essentially normal.

EXPERIMENTAL WORK

Diethylene glycol was administered to 107 young adult white rats and to twenty-six rabbits in the following manner. All the animals studied were kept on a

The expenses of this research were partially defrayed by the Philip Morris Fund.

From the Departments of Pharmacology and Pathology, College of Physicians and Surgeons, Columbia University.

¹ Various new paper article dated October 18 and 19. Death following Elixir of Sulfanilamide. Macmillan editorial. J. A. M. A. 109: 1367 (Oct. 23) 1937.

² Von Oettingen, W. F. and Jirouch, F. A. Pharmacology of Ethylene Glycol and Some of Its Derivatives. J. Pharmacol. & Exper. Therap. 42: 3 (Aug.) 1911.

³ Haag, H. J. and Ambrose, A. M. Studies on the Physiological Effect of Diethylene Glycol. J. Pharmacol. & Exper. Therap. 10: 93 (Jan.) 1917.

standard laboratory diet except that the only source of fluid for the rats was that containing diethylene glycol. The diethylene glycol was of commercial grade, manufactured by the Carbide and Carbon Chemicals Corporation.⁴

Rat group B, seventeen animals, 0.5 per cent in drinking water for from thirty-three to 124 days. No deaths occurred as a result of the procedure.

Rat group C, thirty animals, 1 per cent in drinking water for from thirty-three to 174 days. No deaths occurred from the procedure.

Rat group K, twenty-five animals, 3 per cent in drinking water for from fifteen to ninety-five days. Fourteen died in from five to fifty-six days with extensive degeneration of the renal cortex. The remaining eleven, killed after from fifty-one to ninety-five days, were normal.

Rat group F, thirty-five animals, 5 per cent in drinking water for from one to six days. Nine died in from one to six days as

comatose and often anuric. The blood nonprotein nitrogen rose progressively in both sets of animals from eight to ten times normal.



Fig. 2—Kidney of rat receiving 5 per cent diethylene glycol in drinking water for seventy-two hours. Vacuolization and necrosis of convoluted tubule epithelium. Distention of glomerular space. $\times 315$.

as a result of similar renal insufficiency. The remaining twenty-six were killed after from one to six days. The kidneys of twenty-two were also involved, in some cases as early as twenty-four hours after the onset of the experiment. The average daily intake of glycol water in the several experiments was approximately 30 cc per rat.

Rabbits, twenty-six adults, received 1 or 2 cc per kilogram of body weight of pure diethylene glycol or 2 or 4 cc per kilogram of 50 per cent glycol in a single intravenous injection. Eight died in from one and one-half to eight days following a period of anuria with nitrogen retention. The remaining eighteen rabbits were killed after from one to forty-four days. Half were found to be normal. Half exhibited kidney lesions similar to those in the animals which died spontaneously, in one instance only twenty hours after receiving 2 cc of diethylene glycol per kilogram of body weight. Control animals on the same stock diet remained normal.

PATHOLOGY

Most of the rabbits passed smoky urine giving a positive benzidine reaction for several hours after the injection. Terminally both rats and rabbits were

⁴ Identical lesions have since been obtained in a few animals by the use of redistilled diethylene glycol.

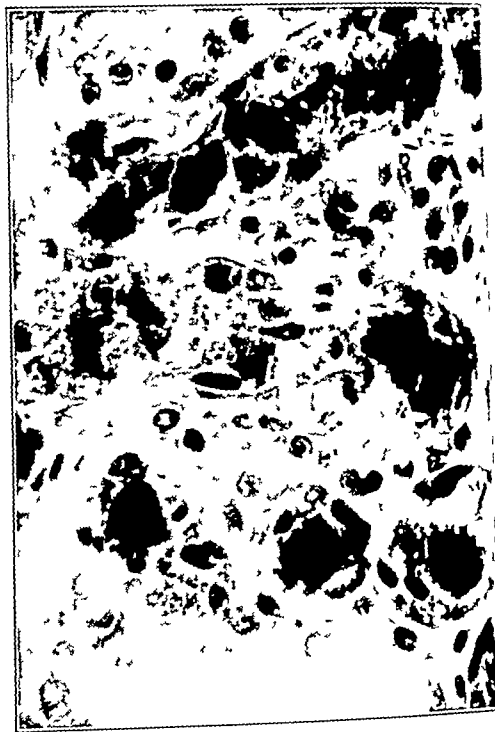


Fig. 3—Kidney of rabbit receiving 1 cc of diethylene glycol intravenously, killed on ninth day. Calcification and regeneration of convoluted tubules. $\times 460$.



Fig. 4—Liver of rabbit dying thirty-six hours after intravenous injection of 4 cc of 50 per cent diethylene glycol. Swelling and vacuolization of liver cells. $\times 75$.

The significant lesions in the affected animals are uniformly in the kidneys, with somewhat less frequent involvement of the liver, and occasionally of the adrenals.

The kidneys are commonly swollen to twice the normal size. The pale yellowish tan cortex is smooth externally and has lost its striations. The medulla often appears congested and moist. Microscopically the process is characterized by widespread, sometimes total, destruction of the epithelial cells of the convoluted tubules. The cells swell and acquire large clear vacuoles which are free of fat and glycogen. This appears to be a form of hydropic degeneration (figs 1 and 2). Occasionally, however, a little finely divided fat is present in the epithelium of both the convoluted tubules and the glomeruli. Necrotic cells are numerous in the severe lesions. Calcification of necrotic cytoplasm may set in as early as the fifth day in rabbits and attempts at regeneration may be present (fig 3). The swollen, vacuolated or necrotic cells completely occlude the lumen of the tubules, resulting in dilatation of the glomerular spaces. The glomeruli are often bloodless and compressed but are otherwise essentially uninvolved. Changes in the medulla are confined to congestion and the occurrence of many hyaline and granular casts in the collecting tubules, with occasional fatty changes.

The liver, though less frequently involved may be enlarged and pale. The cytoplasm of many of the liver cells becomes distended with both large and small vacuoles, which again are free of fat and glycogen (fig 4). Necrosis is not present.

A similar fat-free vacuolization is sometimes found in the epithelial cells of the outer fourth of the adrenal cortex.

Analogous experiments with ethylene and propylene glycols have not produced comparable lesions. Insufficient work has been done to date with dipropylene glycol and with the mono-ethyl ether of ethylene glycol to warrant a definite statement. The observations suggest that the ether linkage of the di-glycols may be the portion of the molecule responsible for the degeneration of epithelial cells of parenchymatous organs, especially of the kidney.

SUMMARY

Diethylene glycol, administered to rats by mouth and to rabbits intravenously, caused extensive injury to the epithelium of the renal convoluted tubules, leading to urinary obstruction and uremia. The liver and adrenals were less regularly involved.

A dose of from 1 to 2 cc per kilogram of body weight intravenously to rabbits was required. The ingestion by rats of 0.5 and 1 per cent solutions in their drinking water in quantities of approximately 30 cc daily per rat for from one to four or five months caused no renal or other symptoms. Three per cent (0.9 cc per rat daily) in the drinking water killed about 50 per cent of the rats within two months. Five per cent diethylene glycol (1.5 cc per rat daily) killed 25 per cent within a week.

630 West 168th Street

Noise Problems in England—The National Physical Laboratory has made measurements and analyses of many noises of very varied origin. Among the noise problems on which the Laboratory has been consulted in recent years are the mitigation of the noises associated with aeroplane cabins and engine testing factories, trains, ships, tube railways, busses, motor horns, pneumatic drills, printing works, transformer substations, cathedrals, assembly halls, business offices, flats, miniature rifle ranges, building operations and so on. Assistance is also being given in connection with the Home Office experiments on air-raid warnings.—Kave G W C. *Noise and the Nation Nature* Sept 11 1937 p 446

TORCH OIL DERMATITIS

ITS RELATION TO EPIDERMOMYCOSIS ("RINGWORM")

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AND

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EAST CHICAGO IND

The constantly increasing list of materials which are causative agents in the production of disabling industrial dermatoses has in recent years caused justifiable concern to industrial management. Plant physicians and dermatologic consultants are more and more put to the test of solving the difficult questions of etiology, pathogenesis and effective treatment.

The now widely used patch test, as emphasized by the excellent work of Sulzberger,¹ has proved to be especially useful in determining the specific causes of these dermatoses. As a rule, even the well trained observer gets little help in the discovery of cause from the physical appearance of the lesions. The stages of erythema, vesiculation, varying degrees of induration, fissuring, oozing, scaling and pigmentation at one phase or another are common to most industrial dermatoses. The factors of configuration and distribution are not of much help. The removal of the victim from contact with substances to which he shows a positive reaction by patch test may at once clinch the diagnosis and effect a cure. When cure does not follow such a step one invokes the usual explanations, e g, altered sensitivity to other materials or secondary scratch dermatitis.

The problem here considered is a dermatitis among machinists in a steel mill, for some years past referred to by plant physicians and workers as oil dermatitis. A total of thirty machinists, all of the white race, have been studied to date. Twenty-two complained of an eruption on the hands. These machinists take rolling mill equipment apart, grease it and reassemble it. One step of the operation is to clean machine pieces with torch oil, a crude kerosene.

After working at this job for from six months to a year, the men notice that their hands begin to have a burning sensation and to feel "dried out" after contact with torch oil. These first symptoms are relieved by scrubbing off the oil and greasing the hands with a cold cream or a "palm" oil which is furnished them. After varying periods of time the skin along the lateral margins of the fingers and the dorsa of the fingers and hands begins to have fine, deep seated vesicles which are intensely pruritic. The combination of scratching and further contact with torch oil makes the lesions worse, and the skin soon cracks and oozes. The lesions increase in number and extent until the hands and forearms are involved. The men all reported that the condition becomes aggravated during hot weather and frequently disappears entirely in winter. One man stated that his exacerbations followed attacks of head cold, of which he had many throughout the year. Another man had learned to control his lesions by applying tincture of iodine to new vesicles as soon as they made their appearance.

Read before the Section on Dermatology and Syphilology at the Eighty Eighth Annual Session of the American Medical Association Atlantic City N J June 9 1937
1 Sulzberger M B and Wile I red. The Contact or Patch Test in Dermatology. *Arch Dermat & Syph* 23 519 (March) 1931

Examination of these workers revealed a uniform process. The earliest lesions were fine tense, intra-dermal vesicles, occurring usually in clusters. They were located anywhere on the hands or fingers, but the most common sites were the lateral surfaces of the fingers and the interdigital webs. The older lesions were slightly larger vesicles, in some instances with loose walls. In places with chronic lesions one saw fissuring, oozing, scaling, and "empty vesicles." A

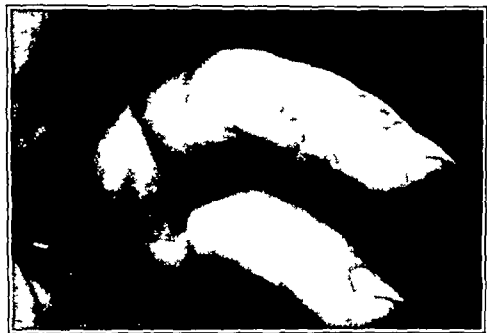


Fig. 1—Torch oil dermatitis (case 9). The medial surface of the left ring finger shows a small cluster of new vesicles in a chronic patch. Fungi were recovered from lesions of the hands in this case.

common site for chronic lesions was an interdigital web. One worker had superimposed pyoderma. During the period of study a man was observed who had many new vesicles on the hands and a generous crop of identical lesions on the skin of the feet and ankles up to the level of his shoe tops. These lesions had appeared immediately after a very hot week-end during which he had been away from work.

Complete examination of these machinists revealed no other condition common than interdigital erosions and vesiculation thus indicating clinical epidermomycosis of the toes in varying degrees of activity. Only one was found to be free from such interdigital conditions, and he was one of those who had never had oil dermatitis. On patch test he was found to be very sensitive to torch oil.

The appearance of the oil dermatitis in these cases, its clinical course, the seasonal variation of its activity and its association with epidermomycosis made it seem worth while to investigate the possibility of a compound etiology, especially with respect to primary or secondary manifestation of epidermomycosis superimposed on a chronically irritated skin.

EPIDERMOMYCOSIS AND MYTIDS

Of the wide variety of lesions now known to be caused by fungi one need consider here only interdigital epidermomycosis and its possible sequelae. Its occurrence is almost world wide.² One finds nearly all adult industrial workers infected, and it is probable that lesions of the toe are the first manifestations of the disease among this class.

The interdigital lesion changes in appearance according to the stage of its activity. During warm weather and periods of increased foot strain one finds moist malodorous plaques occasionally with erythema, vesiculation, oozing and crusting. With the arrival of cooler weather or with decreased foot strain there is subsidence, the lesion frequently presenting no more to the examiner than a shiny surface with a few fine scales between the fourth and fifth toes. Dissemination of the infection from the toes to the moist creases

and accessible dry surfaces of the body is external in way of the patient's own fingers or contact matter. The new lesions, as well as their predecessors, harbor fungi, and both are considered foci of primary involvement.

Organisms entering the blood stream from primary foci are probably distributed to the skin of the entire body. Their advent is followed after some time by an altered tissue reactivity (allergy). Subsequent dissemination through the lymphatics or blood stream from a primary focus produces an acute inflammatory response and secondary lesions, mytids (epidermomytids or dermatophytids).³ Mytids may mimic primary infections to an amazing degree. A common site for their appearance is the hands.

The acute inflammatory reaction which characterizes the development of mytids presumably causes the rapid destruction of any fungi present at the site. Fungi are rarely recovered from these secondary lesions, a fact which must occasionally be relied on to distinguish them from primary foci. The whole process resembles the pathogenesis of tuberculosis of the skin.

Several workers have produced strong evidence in support of this theory. Cleveland White⁴ obtained a positive fungus culture from an inguinal node associated with an active eruption on the foot. Peck and others recovered the organism from the blood of patients. Lesions identical with mytids can be produced in allergic subjects by the injection of trichophyton,⁵ and injection of trichophyton may cause exacerbation of existing lesions. People who have or have had epidermomycosis react with a local inflammation to intradermal injections of trichophyton, overdoses produce severe systemic reactions.

The possible interrelationship of fungous infection and other known causes of cutaneous disturbances has engaged the attention of other workers. Beerman, in his study of leather dermatitis, concluded that an infection of a fungous nature can produce a polyvalent

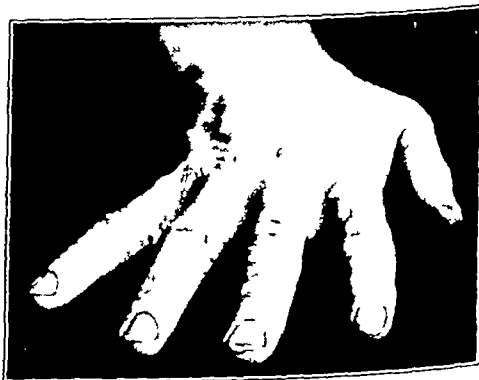


Fig. 2 (case 1)—Typical involvement of the backs of the hands and distal portion of the hand.

allergy of the skin which is responsible for reaction not only to the specific toxin, trichophyton, but to a wide group of substances, among them leather. White and

3 Williams, Charles M. The Diagnosis of Some Fructiferous Hands and Feet Arch Dermat & Syph 5 161 (Feb) 1911 Dermatophytid Complicating Dermatophytosis of the Glabrous Skin ibid 13 (May) 1926

4 White, Cleveland. Mycotic Inguinal Lymphadenitis Associated with Superficial Fungus Dermatitis of the Feet Arch Dermat & Syph 18 271 (Aug) 1928

5 Peck, S. M. Epidermophytosis of the Feet and Epidermophytosis of the Hands Arch Dermat & Syph 22 40 (July) 1930

6 Andrews, G. C. Diseases of the Skin Philadelphia W. B. Saunders Company 1930

7 Beerman, Herman. Factor Involved in Leather Dermatitis Arch Dermat & Syph 29 671 (May) 1934

2 Weidman, Fred D. Laboratory Aspects of Epidermophytosis Arch Dermat & Syph 15 415 (April) 1927

Taub⁸ had previously reported eighteen cases of a similar type and were the first to report this phenomenon. They expressed the belief that a fungous infection can cause sensitization of the skin to materials which otherwise are innocuous. Wise and Sulzberger⁹ also have contributed to this conception of a polyvalent sensitization by their work on eruptions due to drugs. They said that fungous infections cause the broadening of a sensitization to include other materials and also cause a dermal injury which results in the more effective penetration and action of other materials on the tissues.

The conception of Stokes and Kulchar¹⁰ with regard to this problem seems to be more applicable than the foregoing as an explanation of the pathogenesis in the cases here presented. They described an "infectious allergic complex" involving fungous infections which manifested themselves after the administration of arsphenamine. They cited four patients who had previously exhibited no active epidermomycosis but who, after receiving arsphenamine, had acute epidermomycosis of the hands and feet. Their cases included several flare-ups of epidermomycosis following arsphenamine therapy, in which the arsphenamine was considered a contributing allergic factor.

The thought that dermatosis supposedly caused by a contact irritant might in reality be a fungous disease is not new. Indeed, the appearance of the two conditions is so frequently similar that dermatologists have at times felt called on to warn industrial physicians against the pitfall of passing off a bona fide contact lesion as just another superficial fungous infection. Foerster¹¹ recently made a strong plea for more careful differentiation, and Wise and Wolf¹² expressed the belief that a diagnosis of typical fungous dermatosis should not be made unless the patient presents an undoubted focus. It is probable, however, that the criterion of a primary focus is at present too easily met, and it seems that a greater consideration of other factors should be made an additional requirement.

EVALUATION OF CAUSATIVE FACTORS

1 *Torch Oil*—As previously stated, the men take down rolling mill machinery, clean the parts with torch oil and regrease and reassemble them. It was possible to perform patch tests with the oils and greases on twenty-eight of the thirty men studied. The patch test materials were clean grease, old grease, new torch oil and used torch oil (torch oil plus old grease). The two greases were found to be innocuous in all instances.

All the men tested showed some degree of susceptibility to irritation by torch oil. The positive reaction varies from faint erythema to marked inflammation with vesiculation and resembles the type of irritation of the skin one sees with the local therapeutic use of such things as mustard and turpentine. The degree of sensitivity to torch oil seems to vary with the complexion. Light and red-haired persons are readily irritated and dark-skinned men are not.

Men who show considerable sensitivity to torch oil by patch test do not necessarily acquire chronic dermatitis. In this group of thirty machinists there were twenty-one men whose reactions were read 3 plus or 4 plus. Of these, four had severe cases, five had moderate cases, eight had mild cases and four had no oil dermatitis. The last group presented strong evidence that at least one factor other than susceptibility to irritation enters into the etiology of torch oil dermatitis.

It was found that seven men were only slightly (2 plus or less) sensitive to torch oil. In one instance the irritation was almost insignificant and the reaction was read a questionable positive. This man had no dermatitis. Of the remaining six, three had mild cases and three others had clear hands.

It was concluded from these facts that a worker who shows little or no irritation by patch test will not have more than a small amount of torch oil dermatitis if he acquires it at all. Further, a man who shows considerable sensitivity probably, but not necessarily, will acquire that condition.

2 *Epidermomycosis*—It was found that twenty-four men had undoubted interdigital epidermomycosis ("athlete's foot") in varying stages of activity. In five other instances that diagnosis could be made only with reservation, and in one the skin between the toes appeared normal. In none of the last six cases was it possible to examine the skin scrapings. In the five instances in which the diagnosis of interdigital epidermomycosis was questionable, four of the men had no oil dermatitis and one had only a mild case. Patch tests with torch oil in these cases showed considerable irritation in four and moderate irritation in one. Only one man was considered to be free from superficial fungous lesions, and he had no dermatitis of the hands in spite of the fact that he was a blond who was found by patch tests to be very susceptible to irritation by torch oil. The exposure of these six men to that substance at work was equal to or greater than the average for the entire group.

The twenty-four men who had undoubted fungous lesions on the feet showed great variation in the appearance of their hands. Twelve men were considered to have small but definite involvement between the toes (1 plus). Of these, seven had mild cases of chronic dermatitis on the hands, two had moderate and three had severe attacks. Nine men had a moderate degree of superficial mycotic infection (2 plus). Three of these, whose reactions to patch tests with torch oil were only weakly positive, never had dermatitis. Three others had mild attacks only and three had from moderate to severe cases. Three workers had considerable interdigital epidermomycosis (3 plus and 4 plus), among whom there were one case of mild and two cases of moderate dermatitis on the hands.

It appears, then, that a man who has torch oil dermatitis must, in the first place, be susceptible to irritation by that substance. This factor is of both qualitative and quantitative importance. In the second place, such a man must have a definite primary focus of superficial fungous infection. The extent and activity of that primary focus do not predict the seriousness of the oil dermatitis nearly as accurately as does the factor of sensitivity to torch oil. From the data here presented one may assume that the disease does not occur in the absence of either factor (tables 1 and 2).

The amount of exposure to torch oil was too uniform throughout the series to warrant its separate evaluation.

8 White, Cleveland and Taub, S. J. Sensitization Dermatoses of Nonfungous Nature. *J. A. M. A.* 98: 524 (Feb. 13) 1932.
9 Sulzberger, M. B. and Wise, Fred. Drug Eruptions. *Arch. Dermat. & Syph.* 27: 549 (April) 1933.
10 Stokes, J. H. and Kulchar, G. V. The Infectious Allergic Complex in Arsphenamine Dermatitis: Reaction with Special Reference to Dermatomyiasis. *Brit. J. Dermat.* 46: 134 (March) 1934.
11 Foerster, Harry R. Observations on Industrial Dermatology. *J. A. M. A.* 107: 247 (July) 1936.
12 Wise, Fred and Wolf, Jack. Dermatomyiasis and Dermatomyiasis with Particular Reference to Differential Diagnosis of Dysidrosiform Eruptions of Hands and Feet. *Arch. Dermat. & Syph.* 34: 1 (July) 1936.

The usual laboratory procedures gave negative results in all of the cases except one, in which the Kahn reaction of the blood was positive

DIAGNOSIS OF SUPERFICIAL FUNGUS DERMATOSIS

It seems that the procedures in investigating the possible implication of fungous disease in cases of torch oil dermatitis should be as follows

- 1 Establishment of the diagnosis of interdigital epidermomycosis by laboratory methods (direct smear and culture)
- 2 Examination of material from the lesions on the hands for the presence of fungi
- 3 Biologic tests, such as inoculation with trichophyton
- 4 Blood cultures, in an attempt to recover circulating fungi
- 5 Consideration of case histories
- 6 Proper evaluation of therapeutic tests

TABLE 1—Summary of Studies on Men with Dermatitis

Case	Degree of Dermatitis	Torch Oil Patch Test	Mycosis of Toes	Fungi in Toe Lesions	Results of Treatment	Comment
1	4+	4+	1+	Present	Good	
2	4+	4+	2+	Present	Good	
3	3+	4+	1+	Not examined	Not treated	Quit work new vesicles after 4 months
4	3+	Not done	1+	Not examined	Not treated	Off 5 weeks 30% improved
5	3+	4+	2+	Present	Not treated	Fungi present in lesions of hands
6	2+	4+	1+	Present	Not treated	
7	2+	4+	1+	Not examined	Not treated	
8	2+	4+	3+	Present	Not treated	
9	2+	4+	2+	Present	Satisfactory	Fungi present in lesions of hands
10	2+	4+	3+	Present	Not treated	
11	1+	4+	1+	Present	Not treated	
12	1+	4+	1+	Present	Not treated	
13	1+	2+	1+	Present	Good	
14	1+	4+	1+	Present	Not treated	
15	1+	4+	1+	Present	Not treated	
16	1+	3+	4+	Present	Good slow	Response of toes slow
17	1+	1+	2+	Present	Not treated	
18	1+	4+	1+	Not examined	Not treated	
19	1+	3+	?	Not examined	Not treated	
20	1+	4+	2+	Present	Not treated	
21	1+	1+	2+	Not examined	Not treated	
22	1+	Not done	1+	Present	Good rapid	Changed occupation

Discovery of a Primary Focus—There was undoubted physical evidence of interdigital lesions in twenty-four of thirty men studied. It was possible to study material from the toes of sixteen, all of which showed the presence of fungi. It was found that active lesions yield organisms abundantly and that with the exercise of painstaking search fungi are demonstrable in quiescent patches. For good results it is necessary to obtain material from beneath the superficial scales and to clear the preparations with potassium hydroxide for long periods. Both of these steps have been described in detail by Cleveland White.¹³

When speed of diagnosis is not essential, the use of cultures is worth considering. Material obtained from beneath the scales is soaked for about five minutes in 90 per cent alcohol and planted on Sabouraud's medium. There is a characteristic growth of fungi in from ten days to two weeks, which is recognized at a glance by

the trained worker and which can be further identified by microscopic examination. The whole procedure is carried out with a much smaller total expenditure of time than one spends in the direct search of fungi in skin material, especially in lesions of low grade activity. The practical value of cultures is materially diminished by the fact that growth does not occur in all cases showing fungi by direct examination. We were able to culture organisms in only three of sixteen cases in which there were demonstrable fungi in material taken from lesions of the toes.

Examination of Material from Lesions of the Hands—Fungi were searched for in the lesions of the hands in fifteen cases. Vesicles were clipped off at their base, dried and prepared with potassium hydroxide in the same manner in which material from the toes was treated. Some of the vesicles in each instance were immersed in 90 per cent alcohol and subsequently planted on Sabouraud's medium. In two instances fungi were found by direct examination, and in one of these the organism could be cultured. The lesions in these two cases were, by definition, primary foci of fungous disease. Because in appearance they were indistinguishable from similar lesions on the hand of other patients, it was considered that the latter might be mytids.

Blood Cultures—Blood cultures were made for six of the sixteen patients who had demonstrable fungi in the lesions on their toes. The routine followed was to add 2 cc of the patient's blood to 5 cc of sterile broth. A second portion of 1 cc was layered on a slant of Sabouraud's medium. No fungi grew by either method. The procedure was carried out with forty other workmen, not machinists, selected because they had acutely active epidermomycosis of the toes and one or more other places (e. g., groin, axilla, gluteal fold). No fungi grew in any case, indicating what is already well known, namely that it is extremely difficult to obtain positive blood cultures in infections of this type.

The Use of Trichophyton¹⁴—Little use was made of this substance. Unquestionably it should have diagnostic value if, when used in small injections or patch tests, new lesions develop or existing ones become worse. That is not, however, to be expected in any appreciable number of instances of proved fungous infections. The usual positive reaction is a papule or a wheal which indicates simply that the patient has had epidermomycosis. Tolmach and Traub¹⁵ reported eight cases in which fungi were demonstrable in lesions on the feet and responses to trichophyton were negative. Seven of their patients presented accompanying vesicular or squamous lesions on the hands.

The facility with which existing primary superficial fungous disease was demonstrated obviated the diagnostic use of trichophyton in the present study. Besides it was necessary to consider the possibility of severe constitutional reactions, which are said occasionally to occur and which in this study might have had serious medicolegal aspects. Intradermal injections were made on four of the men who never had torch oil dermatitis and all showed definitely positive reactions.¹⁶ One of these men had no detectable fungous lesion anywhere.

14. Sulzberger M. B. and Wise Fred. Ringworm and Trichophyton. Newer Developments. Including Practical and Theoretical Considerations. J. A. M. A. 99: 1759 (Nov. 19) 1929. Council on Pharmacy and Chemistry. Preliminary Report on Trichophyton Extract (Mycophyton). J. A. M. A. 99: 1779 (Nov. 19) 1932. Andrews, Tolmach J. A. and Traub F. F. Epidermomycosis and Trichophyton Reaction. Arch. Dermat. & Syph. 28: 560 (Oct.) 1933.

13. White Cleveland. The Role of Fungi in Occupational Skin Diseases, Illinois M. J. 56: 219 (Sept.) 1929.

16. Dr. Harry P. Jacobson of Los Angeles provided a mixed polyvalent fungus vaccine (so called metaphyton).

and in the other three cases the diagnosis of interdigital epidermomycosis was questionable. No studies of toe scrapings were made in any of these four cases.

Consideration of Case Histories—Machinists with torch oil dermatitis uniformly have exacerbations in summer and improve rapidly with the onset of cool weather. Plant physicians do not see any cases during the winter. During and immediately after peaks of very high summer temperatures there are flare-ups in patients who were doing fairly well under one form of therapy or another.

As was previously noted, one patient had a marked exacerbation of new vesicles in groups following a hot week-end during which he was away from work. At the same time numerous vesicles developed on the feet which were suggestive of a phytid reaction on another part of the body identical in appearance with the torch oil dermatitis on the hands.

A second man had an exacerbation after a day's work during which he had worn rubber gloves to protect his skin from torch oil. In this instance the fungous infection was primary on the hands, the organism having been recovered from one of the vesicles.

The effect of withdrawal from exposure to torch oil could be observed when it became necessary for two machinists to leave work for other reasons. In the first instance the man sustained a Colles fracture which caused his absence from the plant for five weeks. During that time he applied phenolated petrolatum to his hands as was necessary to relieve itching. At the end of five weeks during which the weather was continuously hot his dermatitis had improved only an estimated 30 per cent. In the second instance a worker was advised to leave work because of moderately advanced tuberculosis. He was seen at intervals throughout the spring and summer for a period of four months. He improved to an estimated extent of 80 per cent in that time, but at the last interview it was found that a cluster of new vesicles had recently developed along a finger margin. No attempt had been made to treat the oil dermatitis in this case.

Therapeutic Tests—Previous attempts at the treatment of this condition were uniformly failures. A grand array of standard and proprietary ointments had been used with discouraging results. At the time of this study all the afflicted men were instructed to apply Whitfield's ointment to the hands and to daub the toes with a solution of 10 per cent salicylic acid, 5 per cent benzoic acid and 1 per cent phenol in alcohol. There was rapid and definite improvement in the entire group for a short time, after which the majority ceased reporting for observation and treatment.

A group of eight men continued to be cooperative and were seen daily. Four of these were kept on treatment. Their toes were painted on three successive days with the alcohol solution and for eleven days afterward with tincture of merthiolate (Lilly), and at the end of the two weeks the painting with the alcohol solution was reinstituted. The men took soap and hot water foot baths daily, rubbing off all removable scales with towels. Their hands were kept covered with applications of 10 per cent sulfur and 5 per cent salicylic acid in petrolatum. New crops of vesicles were painted daily with the alcohol solution until they began to dry, usually after three or four days.

The remaining four men were used as controls. They were supplied with good surgical hand brushes and tincture of green soap with which to scrub off all torch

oil at the end of a shift. After this cleansing they greased their hands thoroughly with phenolated petrolatum. No treatment was given the feet.

For about two weeks the control group improved more rapidly than did the four treated patients. Soon after the onset of a severe July heat wave however, the entire control group had exacerbations and asked to be placed on the "ringworm treatment." The two men considered most likely to cooperate were added to the treatment list, and we carried on through the rest of the summer with six men all of whom continued to do their regular work.

The progress of these six men was considered satisfactory. Complete cures were not obtained in any of their cases, but the men were able to work comfortably all summer and fared much better than any of their fellow workers. At no time during the summer was the dermatitis in any treated patient as severe as it had been in the late spring, when this study was started. The cases in which there was the most extensive epidermomycosis of the toes were those in which therapeutic

TABLE 2—Summary of Studies on Men Without Dermatitis

Case	Torch Oil Patch Test	Mycosis of Toes	Fungi in Toe Lesions	Comment
1	4+	0	Not examined	Positive reaction to trichophyton
2	1+	2+	Not examined	
3	4+	?	Not examined	Positive reaction to trichophyton
4	2+	?	Not examined	Positive reaction to trichophyton
5	3+	?	Not examined	
6	?	2+	Not examined	
7	4+	?	Not examined	Positive reaction to trichophyton
8	2+	2+	Not examined	Positive Kahn reaction of blood

progress was slowest. In none of the six cases could one be satisfied that the lesions on the toes had entirely cleared.

BACTERIOLOGIC STUDIES WITH TORCH OIL

Previously to this work it was assumed by the plant personnel that oil dermatitis was a contagious disease. The causative organism was believed to be transmitted through the oil from worker to worker, gaining entrance by way of the small abrasions in the skin which machinists constantly sustain.

A careful inquiry into case histories yielded information which strongly contradicted that theory. One of the first workers to be examined had pyoderma superimposed on his oil dermatitis. Though he had worked in the same torch oil as his fellow workmen for weeks, none of the other men had pus-forming lesions. More conclusive than this evidence was the discovery by some of the machinists that torch oil made a good antiseptic application to scratches and abrasions. Wounds anywhere on the body so treated never became infected and healed rapidly. The use of torch oil in this way is of course confined to men who are not readily irritated by that substance.

Experimental work done with the torch oil showed that it was always sterile regardless of how long it had been in use. Small amounts (2 cc.) placed in plain broth in blood broth or on agar slants never showed growth of any organism.

A culture made in the case of oil dermatitis complicated by pyoderma showed pure *Staphylococcus*

albus A loop of this culture spread on a plain nutrient agar slant and immediately covered with a film of torch oil failed to grow. With the substitution of 2 per cent blood agar for plain agar there was a scant growth in twenty-four hours. When a plate of growing colonies on plain agar was covered with torch oil no further growth occurred, but on transplanting those colonies after twenty-four hours under torch oil there was apparently normal growth.

All the colonies of *Staphylococcus albus* which could be recovered from an agar slant of virulent organisms were transferred to a small vaccine bottle containing about 20 cc of torch oil and a few sterile glass beads. The vial was shaken vigorously for one minute, after which 1 cc portions were withdrawn through the rubber stopper by means of a hypodermic syringe and needle and layered on agar slants. There was growth of *Staphylococcus albus* after five and after ten minutes, but after fifteen minutes the suspension of bacteria in oil was sterile. The experiment was controlled by the substitution of sterile distilled water for torch oil in the vaccine bottle. After one and one-half hours of continuous shaking in a motor-driven shaker there still was growth of *Staphylococcus albus*.

TORCH OIL BURNING

Very susceptible persons naturally may be irritated more readily by contact with torch oil than were any of the machinists reported on in this study. Such an instance came to our attention when a machinist's helper had an acute vesicular eruption on the hands and fingers after working for only one day with torch oil. The skin of his hands was generally erythematous, the vesicles were uniformly distributed and not in clusters, and they were superficial and variable in size. The man was removed from contact with torch oil, and in nine days his skin was entirely clear. This acute burning is essentially different from chronic torch oil dermatitis. The latter condition develops only after months of exposure, and the original vesicles are small, uniform in size and deep seated. Further, the vesicles are grouped in clusters, batches appear from time to time and cure does not follow shortly after removal from contact.

COMMENT

Torch oil dermatitis is probably incipient during the first months of a worker's contact with torch oil. At this stage the condition manifests itself subjectively only, with a sense of dryness, tingling and some itching. A few men report that the skin "looks dried out" at that time. The symptoms at this stage are relieved by washing off the torch oil and greasing the skin with any nonirritating oil or grease.

It is probable that the damage to the skin caused by torch oil rests mainly on its solvent qualities and that its chief deleterious action consists of removing the normal skin oils. There is in addition a mild irritation caused by torch oil that is produced by all oils of its approximate volatility and hydrogen unsaturation.¹⁷ This irritation is seen in patch tests on persons of varying susceptibility, and one encounters a rare person in whom acute vesicular eruptions occur from ordinary contact at work. The physical irritation which torch oil causes to the skin varies noticeably with one factor only, the person's complexion.

In the usual case the incipient stage lasts from three months to a year, and then crops of small vesicles make

their appearance. It is probable that in most cases the vesicles are epidermomytids. They appear with the coming of the first hot weather, and they usher in the sequence of eczematoid dermatitis: vesiculation, fissuring, oozing, crusting, scaling and discoloration. Workers with no primary foci of fungous infection do not acquire lesions on the hands. The dermatitis becomes aggravated by further exposure to torch oil which now causes erythema and intense smarting. New crops of vesicles develop from time to time, usually during or just after hot weather. Their appearance is often independent of recent exposure to torch oil.

The conception that a focus of fungous disease might make a worker more susceptible to a contact irritation does not hold here. In the case of one machinist there was no fungous lesion, yet the man was shown by patch test to be very susceptible to irritation with torch oil. Another worker had definite interdigital epidermomycosis, and the reaction to his patch test with torch oil was at most only questionably positive. In neither of these men was there ever any evidence of oil dermatitis. It is probably true that the chronic irritation associated with contact with torch oil alters the skin of the hands in such a manner as to favor the subsequent development of epidermomycosis and mytids. When no focus of primary fungous disease exists there can be no mytids, and when torch oil does not cause appreciable cutaneous irritation mytids fail to appear on the hands in spite of active fungous lesions elsewhere.

SUMMARY AND CONCLUSIONS

1 In the industrial dermatitis of the hands described there probably is an interrelationship between contact with torch oil and the existence of a focus of superficial fungous disease. This conclusion is arrived at through the following observations: (a) No case of dermatitis was seen in workers who did not also have interdigital epidermomycosis of the feet, (b) fungi were recovered from lesions of the hands in two out of twenty-two cases, (c) the clinical course of the affliction closely simulates that of fungous disease, and (d) therapeutic measures ordinarily employed in the treatment of epidermomycosis are of unusual value in torch oil dermatitis.

2 The demonstration of a focus of fungous disease is not enough to warrant the incrimination of that infection in the development of an industrial dermatitis. Such foci probably exist almost universally among laborers at the present time.

ABSTRACT OF DISCUSSION

DR HARRY R. FOERSTER, Milwaukee. The authors have called attention to a series of cases that represented what in their industry had been considered an occupational dermatosis, so-called torch oil dermatitis, and they have shown that with one or two exceptions these are not cases of torch oil dermatitis but cases of epidermophytid reaction occurring in persons previously sensitized by contacts with torch oil. It is significant that the patients who were examined who had epidermophytosis on the feet and negative patch tests with torch oil failed to develop dermatitis or phytid reactions on the hands. There is apparently an interrelationship between fungous infection on the feet, the contact and sensitization to torch oil, and the development of phytid lesions. Most dermatologists are familiar with the process by which a fungous infection on the feet or groins, and subsequent phytid reactions on the hands, predispose to the development of contact dermatitis. In the cases presented by Drs. Kammer and Callahan the reverse exists, chemical contact sensitization appearing to favor the development of an epidermophytid reaction. The question may properly be put whether a condition like this

actually occurs or whether these patients may not have previously had mild phytid reactions on the hands that were not recognized by them and did not provoke active dermatitis necessitating medical care but which in turn favored the development of a contact dermatitis subsequently, on continued exposure to torch oil, leading to the development of clinical dermatitis only on the sites of pre-existing phytid lesions. This would not produce a picture of diffuse contact dermatitis but of discrete vesicular and squamous lesions at sites of allergic epidermis. The authors have also demonstrated in their investigation the value of patch tests in the study of contact dermatitis and that they are not infallible. They have obtained positive tests when one would expect negative, and they have failed to obtain positive tests when they should logically have appeared. The authors have also demonstrated in their investigation the value of patch tests in the study of contact dermatitis and that they are not infallible. They have obtained positive tests when one would expect negative, and they have failed to obtain positive tests when they should logically have appeared. The authors have also demonstrated the practical value of examination for the fungus in fresh specimens of skin and also, from the point of view of routine office and factory work, the impracticability of Trichophyton tests, blood cultures and cultural growths of skin specimens. The question that arises, if these are accepted as having been phytid reactions in patients sensitized by previous exposure to torch oil, is whether such cases are compensable. I believe that a condition of this type, even though it is not a contact dermatitis, should be accepted as an occupational disease and therefore a compensable disease when it produces disability because its development apparently requires a combination of circumstances one of which is occupational.

DR CLEVELAND J WHITE, Chicago. The belief of the speakers that the prolonged low grade chemical torch oil contact predisposes the skin of the hands to secondary fungous infection is well received and will be confirmed by other investigators. At Dr Kammer's invitation I had the opportunity of studying every case history that was outlined here, and I see no flaws in the interpretations given by the authors. The possibility of finding fungi in lesions of the hand is extremely difficult, as we have all found out. If there is anything I might add it is that these cases in which the fungi were not found may well be actual fungous infections rather than phytid on account of the response to therapy. Furthermore, I should say that some conclusions can be accepted from some of our work at Northwestern University Medical School a few years ago in which we took fungi from between the feet and planted them on the back of a rabbit's skin. The fungi quickly changed their morphology, the lesion persisted and in time the fungi disappeared altogether. This phenomenon could account for some of these lesions here. The nouse of the biologic extracts is to be commended because of the legal angles. They are a double edged sword and may produce a great deal of trouble, and I feel that the diagnosis was well established without using them. Furthermore, I believe all experience has shown that the use of biologic extracts has not made an exact diagnosis of superficial fungous infection. Like Dr Foerster, I extend my congratulation to men who are busy in a routine clinic and are not stimulated by the walls of a great research and teaching institution, in the solution of the phase of these eczematous eruptions of the hands.

DR ADOLPH G KAMMER, East Chicago, Ind. In answer to Dr Foerster's question as to the possibility of the existence of small phytids in these men before they were exposed to torch oil, I cannot give a definite answer. The only thing I can give is the histories of the men, namely, that they had good hands before they began to work. Shortly after the appearance of small vesicles on the hands the torch oil has a different effect on the men, it then begins to burn intensely and to cause considerable discomfort, and inflammation is evident. There was one man who had lesions, who had been a truck driver in a CCC camp, and he stated that this was simply an exacerbation or a recurrence of the disease which he had as a truck driver. That man had fungi on his hands, he had purely an epidermomycosis.

GLYCERIN, ETHYLENE GLYCOL, PROPYLENE GLYCOL AND DIETHYLENE GLYCOL

REPORT ON FEEDING EXPERIMENTS WITH RATS

HARALD G O HOLCK, PH D
CHICAGO

The substitution of diethylene glycol for glycerin as a hygroscopic agent in industry makes it desirable to compare the toxicity of these two chemicals. Both have high boiling points, 245 and 290 C, respectively. Hence, small amounts may possibly pass unchanged with smoke from a cigaret into the body in addition to anything absorbed from the moist end of the cigaret in the mouth.

In view of the rather high toxicity of the related ethylene glycol and because of the use of propylene glycol as a solvent for iodobismutol, it was thought desirable also to include a rough comparison between commercial samples of diethylene glycol and these two related chemicals.¹

Recent exhaustive studies² have shown that glycerin may constitute a large proportion of the food of rats over long periods and that smaller amounts may be added to adequate diets of growing dogs and of man without apparent harm. In fact, the rats showed normal growth and reproduction on such a diet and glycerin could be substituted for part of the food. Only with very large quantities was there diuretic action in dogs and rats. In spite of this favorable report my associates and I decided to include glycerin in our feeding experiments so as to make certain that the rats had the usual tolerance to this compound.

The recent literature dealing with the properties of the glycols is fairly extensive. A comprehensive paper by von Oettingen and Jirouch³ deals with seven glycols, including ethylene glycol and diethylene glycol. Both caused hyaline shrinking of muscle fiber, ethylene glycol caused a slight and diethylene glycol a questionable hemolysis, methemoglobin formation was absent with ethylene glycol and uncertain with diethylene glycol. The minimal fatal dose in mice was twice as high for diethylene glycol as for ethylene glycol. Both had a slight action on the central nervous system, caused slight hyperemia and muscle rigor and had a slight antiseptic action toward yeast. Diethylene glycol was more depressing to striated muscle than ethylene glycol but had an uncertain depressive action on the intestine as compared to ethylene glycol. Neither caused edema, sensory nerve ending depression or motor nerve fiber depression. The authors concluded:

Local irritation is comparatively small. Their application to the skin seems to be without risk. Given orally in larger doses they may produce severe gastro enteritis and systemic symptoms. For intramuscular injection only small doses should be used, else systemic effects may arise. Subcutaneous injections should be avoided on account of local irritation. The intravenous administration would appear to be dangerous, because of the hemolytic action and of the fall of blood-pressure observed with these compounds.

Ethylene glycol was also studied extensively by Hanzlik, Seidenfeld and Johnson,⁴ who used both intra-

From the Department of Physiology of the University of Chicago. Profs. A. J. Carlson and A. B. Luckhardt gave helpful suggestions regarding this problem.

¹ These two glycols were supplied by the Carbide and Carbon Chemical Corporation, South Charleston, W. Va.

² Johnson, Victor, Carlson, A. J. and Johnson, Adelaide. *Am J Physiol* 103: 517 (March) 1933.

³ von Oettingen, W. F. and Jirouch, E. A. *J Pharmacol & Exper Therap* 42: 355 (Aug) 1931.

⁴ Hanzlik, P. J., Seidenfeld, M. A. and Johnson, C. C. *J Pharmacol & Exper Therap* 11: 387 (April) 1931.

muscular injections and drinking experiments. In chronic feeding experiments on rats, smaller daily doses (0.7 Gm per kilogram) stunted growth but did not injure the kidney, whereas the higher daily dose of 2.2 Gm per kilogram caused variable degrees of ovaluria and renal calculi, verifying previous reports. As a solvent for medicinal products with intramuscular injections it was considered "comparatively innocuous." Hunt⁵ reported kidney injury by oxalic acid formation when ethylene glycol was administered in the drinking water of different species of animals and cautioned against continued administration of small doses to man. In this and a subsequent paper he⁶ also warned strongly against the promiscuous use of ethylene glycol in food products or as a substitute for glycerin. As to propylene glycol he found that, with a 5 per cent solution as the only liquid for drinking, rats showed normal growth and also good tolerance to it when their livers or kidneys had been injured by various poisons. Hunt suggested that propylene glycol may have a "true food value in the sense that ethyl alcohol does, and without the drug action of the latter." Wiley, Hueper and von Oettingen⁷ concluded that low concentrations of ethylene glycol vapor in the air (300 mg per thousand liters) is not toxic when intermittently given to mice or rats as judged by weight curves and histopathologic examinations, although one of ten rats and three of twenty mice died during the tests with 398 mg per thousand liters for eight hours a day, five days a week, sixteen weeks, with no controls to show that similar mortality would occur in untreated rats and mice.

In their extensive study on bismuth excretion in rabbits and patients, Hanzlik, Mehrtens and Spaulding⁸ used ethylene glycol as the solvent for iodobismutol without any untoward effects by this glycol. Seidenfeld and Hanzlik⁹ found propylene glycol to be much less toxic than ethylene glycol in injection and feeding experiments as judged by animal growth and tissue appearance by microscopic examination. No demonstrable accumulation effects were seen with concentrations of from 1 to 10 per cent in the drinking water. However, propylene glycol did cause somewhat greater local irritation than ethylene glycol. Finally, Hanzlik, Mehrtens and Spaulding,¹⁰ in a comparison of propylene glycol and diethylene glycol, concluded that iodobismutol prepared with propylene glycol is less toxic and prepared with diethylene glycol is more toxic systemically than ordinary iodobismutol prepared with ethylene glycol.

Haag and Ambrose¹¹ report that concentrations of 3 and 10 per cent, respectively, of diethylene glycol in the drinking water of rats proved rapidly fatal.

TOXICITY OF DIETHYLENE GLYCOL¹² IN FOOD AND WATER AND THAT OF GLYCERIN IN FOOD, AND ETHYLENE GLYCOL AND PROPYLENE GLYCOL IN WATER

The results of an eleven weeks experiment show that female rats 4½ months old on a control diet of fox-chow (Purina Mills) and water gained in weight about

to the same extent as did those who had eaten fox-chow containing 20 per cent glycerin or 20 per cent water.

However the fox-chow containing 20 per cent diethylene glycol killed five of six rats within four weeks. One kidney (found to be normal) was removed from the sixth sick rat after two weeks, on a normal diet this rat promptly recovered. When the fox chow contained 10 per cent diethylene glycol, three of five rats died within eight weeks, but one showed normal gain in weight. From the fifth rat, which was losing weight, one kidney (found to be normal) was removed after the eighth week. On our control diet this rat recovered promptly. With fox-chow containing 5 per cent diethylene glycol, one out of six rats died after seven weeks and another after ten weeks. Of the remainder, one showed but a slight increase in body weight and the other three had made approximately normal gains.

When the drinking water contained 5 per cent diethylene glycol, the toxicity was markedly greater. All five rats died within eleven days (average duration of life, eight days). However, an equimolecular solution of commercial ethylene glycol (292 per cent) was even more toxic, killing all six rats within six days (average duration of life, four days). On the other hand, an equimolecular solution of commercial propylene glycol (358 per cent) was much less harmful than that containing the diethylene glycol. One of the six rats died after the tenth week and one had lost considerable weight at the end of the eleven weeks. The remaining rats were beginning to lose weight at the end of the experiment. Thus, the commercial propylene glycol appears to be more toxic than the highly purified substance administered to rats by Hanzlik and his associates⁹ or the propylene glycol used by Hunt.¹³

Further analysis of the food and water intake showed that with fox-chow containing 20 per cent glycerin the rats ate 23 per cent less fox-chow per day than the ones fed pure fox-chow, but they ate only 11 per cent less than those who had had fox chow with 20 per cent water as their food. The average daily consumption of glycerin was 2.7 Gm. As to water intake, no conclusion seems warranted because the rats who ate fox-chow containing 20 per cent water drank considerably more water than did the controls, indicating that there may be considerable variation in drinking habits even with animals of nearly the same size.

Considering fox-chow consumption per average hundred grams of gain in body weight during the eleven weeks, 11 per cent less of actual fox-chow was needed when the fox-chow contained 20 per cent of glycerin, indicating that glycerin was used as a food substitute.

The average daily fox-chow consumption was 6 per cent less than in the controls when the fox-chow contained 5 per cent of diethylene glycol. When it contained 10 per cent, the fox-chow consumption was 10 per cent less, or about the same as when the fox chow had 20 per cent of glycerin. Considering again the small number of animals, these differences are not significant. However, the large increase in the average daily water intake (75 per cent) when the fox chow contained 10 per cent of diethylene glycol may indicate an attempt to wash down the ill tasting food with water.

When the diethylene glycol proportion in the fox chow reached 20 per cent, the average daily fox chow consumption declined sharply to 24 per cent of the control value in these quickly dying rats. The even

5 Hunt Indust & Engin Chem 24 361 1932
6 Hunt Indust & Engin Chem 24 836 1932
7 Wiley, F. H. Hueper W. C. and von Oettingen W. F. J Indust Hyg & Toxicol 18 123 (Feb) 1936
8 Hanzlik P. J. Mehrtens H. G. and Spaulding J. B. Iodobismutol Arch Dermat & Syph 29 298 (Feb) 1934
9 Seidenfeld M. A. and Hanzlik P. J. J Pharmacol & Exper Therap 44 109 (Jan) 1932
10 Hanzlik P. J. Mehrtens H. G. and Spaulding J. B. J Pharmacol & Exper Therap 49 300 (Nov) 1933
11 Haag H. B. and Ambrose A. M. J Pharmacol & Exper Therap 59 93 (Jan) 1937
12 This diethylene glycol was furnished by the Miner Laboratories of Chicago; it was the kind used in our cigaret experiments. The Miner Laboratories also furnished the glycerin.

13 Hunt (footnotes 5 and 6)

sharper reduction in the average daily water intake to 18 per cent of normal indicates that these rats became too sick even to drink.

When the water contained 5 per cent of diethylene glycol, the reduction in average daily eating of fox-chow was even more severe than when the fox-chow had contained 20 per cent of diethylene glycol, the intake went down to 17 per cent of normal. The average daily water intake was also markedly diminished to 31 per cent of normal.

When the water contained an amount of ethylene glycol equimolecular with the 5 per cent diethylene glycol, the average daily consumption of fox-chow was nearly twice and the average daily water intake nearly three times that of the rats that had been drinking 5 per cent diethylene glycol, thus the water intake was nearly normal. Therefore, on an average, the rats took in 27 times more ethylene glycol molecules daily than those of diethylene glycol, which may partly explain why they were dying twice as rapidly.

When an amount of propylene glycol equimolecular with the 5 per cent diethylene glycol was present in the water, the rats ate and drank approximately as much as the control rats, thus, on an average they took in three times as many propylene glycol molecules daily as when diethylene glycol had been added to the water. The latter fact further emphasizes the much greater toxicity of diethylene glycol as compared with propylene glycol.

A COMPARISON OF THE EFFECTS OF GIVING VARYING CONCENTRATIONS OF PURE DIETHYLENE GLYCOL (EASTMAN) IN THE DRINKING WATER OF YOUNG RATS

Because the toxic effects following administration of commercial diethylene glycol may possibly have been due to impurities, we added a nine weeks experiment in which pure diethylene glycol was added in varying amounts to the drinking water of rats which were from 7 to 8 weeks old, concentrations started at a level 20 per cent lower than the one that had killed all rats within eleven days. This new concentration of pure diethylene glycol was thus 4 per cent, it killed three of the five rats within nine days, but the other two survived.

On the lower concentrations of 2, 1, 0.5, 0.25 and 0.125 per cent, respectively, of diethylene glycol, no animals died. However, the average actual and percentage gains in body weight during the nine weeks was less than half of that of the controls. Not until the concentration had become as low as 0.125 per cent were these growth averages exactly up to the control values.

Looking next on the average daily amounts of fox-chow eaten, the values are 24 per cent lower than the control intake when the water contained 2 per cent of diethylene glycol. In case of the two highest concentrations (2 and 1 per cent, respectively), there was also a noticeable diminution in actual water intake to 59 and 67 per cent of normal, respectively.

With the higher concentrations of pure diethylene glycol in the water there were dark discolorations around the genitalia, these were not blood, this indicates that diethylene glycol or some darker decomposition product was being passed in the urine. Thus some diethylene glycol was being absorbed.

In the case of the rats which died acutely from diethylene glycol poisoning, the stomach and intestine showed signs of marked local irritation and in some cases considerable blood and local injury.

Comparing the liver, kidney, lung and myocardium of the rats that had been given commercial ethylene glycol, propylene glycol, diethylene glycol or glycerin in the food or water with those of the control rats, no certain damage was demonstrable to these vital organs as judged by examinations of sections stained with scarlet red or with hematoxylin and eosin. These examinations were done by courtesy of Dr. Paul R. Cannon.

Considering the same four organs of the rats which had been given varying concentrations of the pure diethylene glycol in the drinking water, no certain damage could be seen in the liver, kidney or lung. Dr. Eleanor Humphreys, who carried out these examinations, reported an indication of a possible slight change in the myocardium with the three highest concentrations as judged by the hematoxylin and eosin staining technique, but it was slight and not present in all cases.

COMMENT

The results of these experiments place diethylene glycol between ethylene glycol and propylene glycol in toxicity. A high concentration of glycerin in the solid food (20 per cent) seemed harmless. Diethylene glycol in one fourth of this concentration in the fox-chow and in much smaller concentrations in the drinking water was distinctly harmful as judged by cases of mortality, stunted growth in the young, and impaired reproductive capacity.

Even after prolonged administration of diethylene glycol in the concentration employed, however visible microscopic changes in the liver, kidney, lung, heart and testis were absent. Both the frozen section method and the staining with hematoxylin and eosin were used in the first four of these tissues. Although diarrhea was not observed, I believe that the absence of pathologic changes in these vital organs may indicate that local irritation probably is an important factor in the toxicity.

Because the rat in some cases is much more tolerant to poisons than man, for example, to atropine, and in other cases shows peculiar susceptibilities, for example, delayed death after slightly hypnotic doses of nialal, we do not know with certainty what the relation is with diethylene glycol. However, the report by Hunt⁶ of greater susceptibility of man to ethylene glycol than the rat—comparing the per kilogram dosage—probably means that man is also more susceptible to diethylene glycol.

SUMMARY

1 In an eleven weeks experiment, younger adult female rats gained about the same in body weight as control animals when a high concentration of glycerin (20 per cent) was mixed with their solid food.

2 Similar concentrations of commercial diethylene glycol killed all rats within about two weeks, and even 10 and 5 per cent proved fatal to some of the rats. Diethylene glycol is even more toxic when added to the drinking water. When the rats drank from a 5 per cent solution, the average duration of life was only eight days.

3 With the equimolecular concentration of commercial ethylene glycol (292 per cent) in the drinking water, the rats lived only an average of four days but actually had consumed 27 times as many molecules of ethylene glycol per rat daily.

4 With an equimolecular concentration of commercial propylene glycol in the water (358 per cent), one rat died at the tenth week, one was sick and others were beginning to lose weight at the end. The average daily

intake was three times as many molecules of propylene glycol as of diethylene glycol. This places diethylene glycol between ethylene glycol and propylene glycol in toxicity, but nearer the first one.

5 When pure diethylene glycol was added to the drinking water of 2 months old female rats, some died with the highest concentration of 4 per cent and growth was markedly stunted at this level. Even in the concentration of 0.25 per cent, some indication of impaired growth was detectable.

6 That diethylene glycol was being absorbed with the higher concentrations was indicated by discolorations around the genitalia. With high concentrations, local injury and bleeding of the stomach and intestine were frequently seen in the fatally poisoned rats.

7 In microscopic examinations of the liver, kidney, lung and myocardium the only possible change seemed to be a slight one in the myocardium with 1, 2 and 4 per cent of pure diethylene glycol, respectively, in the drinking water, but even this change was not uniformly present and hence may not be significant. Both the frozen section method and the hematoxylin and eosin staining method were employed.

8 Pregnancy did not occur when males and females were mixed and both received 0.5 per cent of pure diethylene glycol in the drinking water. There was some indication of smaller and fewer litters in females receiving 0.25 and 0.5 per cent in the drinking water when mated with frequently changed fresh stock males.

COMMUNICABLE DISEASE CONTROL IN PRIVATE PRACTICE

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Physicians who elect to immunize children against smallpox, diphtheria, scarlet fever, pertussis and typhoid fever are confronted by the practical problem of deciding when to administer each prophylactic procedure. A partial solution of this problem probably can be accomplished through the tendency displayed by young infants to be rather refractory to diphtheria and scarlet fever throughout a considerable period during which they are quite susceptible to smallpox and pertussis. This tendency apparently justifies observance of the general policy of temporarily deferring immunizations against diphtheria, scarlet fever and typhoid fever in order that smallpox vaccinations and pertussis inoculations may be completed in the first six months of life.

Whether smallpox vaccinations should usually precede or follow pertussis inoculations is a debatable question. The customary failure of successful smallpox vaccinations when performed during the first three months of life to cause appreciable systemic reactions is a practical point in favor of the early administration of this preventive measure. Also the greater prevalence of whooping cough and its seriousness during infancy can be advanced as important reasons for giving precedence to pertussis inoculations.

Obviously, many factors deserve consideration when the details of individual programs of immunization are

outlined. We venture, therefore, merely to suggest that smallpox vaccinations and pertussis inoculations be performed under the age of 6 months and that immunizations against diphtheria, scarlet fever and typhoid fever be administered in the following twelve or more months (table 1).

During the past three years we have inoculated 3,000 children with Sauer's pertussis vaccine (table 2), in most instances between the ages of 3 and 12 months, and in the recommended total dose of 8 cc. An average of one and three-tenths years has elapsed since the series was inoculated, and in this interval two members of the group had pertussis, eleven and fourteen months after immunization, respectively. In one instance the disease was of moderate severity, and in the other it was rather mild.

Reactions such as fever and edema, erythema and soreness of the arm have been reported occasionally when full doses of the vaccine were injected. Reports of this character practically disappeared when the plan of giving the vaccine to young infants in six semi-weekly or weekly half doses was tried.

During the past six years we have administered 135,000 or more skin test units of Dick's scarlet fever toxin to each of a series of 526 children (table 2). Owing to some uncertainty on our part relative to the value and significance of the Dick test, this test was not applied as a matter of routine after immunization.

When the toxin was given in five separate doses disturbing reactions, which included vomiting, urticarial and scarlatiniform rashes, joint pains, fever and soreness of the arm were reported with considerable frequency. Although various methods were used to avoid these disturbances, their incidence did not decline appreciably until the plan of giving the toxin in ten semi-weekly or weekly half doses was tried. According to our experience, parents generally feel that the avoidance and the attenuation of the reactions which may attend scarlet fever immunization more than compensate for the inconvenience of five extra visits to the office.

Since we administered Dick's scarlet fever toxin to this series of 526 children, an average postinoculation period of two and seven-tenths years has elapsed, and in this interval four members of the group had a mild form of scarlet fever. The disease appeared two months after the completion of inoculations in one instance, and in the remaining three patients the development of scarlet fever postdated the immunization by six or more months.

Owing to a lack of comparable control groups, the observations made on the two series of children immunized against pertussis and scarlet fever obviously justify no attempts to estimate the degree of specific protection that each of the two procedures produced. Nevertheless, the observations demonstrate that inoculations against pertussis and scarlet fever with currently recommended amounts of each material may occasionally fail to produce adequate protection against the disease the immunization in question is specifically supposed to prevent. Our experience in private practice has failed to disclose comparable failures relative to the effectiveness of smallpox vaccination and diphtheria immunization.

Carefully controlled Schick tests applied in 1936 to 3,205 freshmen at Minnesota University with an average age of 18 years yielded positive reactions in 70.1 per cent of the group (table 3). This series of students consisted largely of native residents of Minn.

nesota who had lived in the state during a period in which the local morbidity rate for diphtheria was falling rapidly to relatively low levels. Whether the high incidence of apparent lack of immunity to diphtheria observed for these young adults is evidence that environmental conditions, which normally operate to pro-

TABLE 1—Suggested Program of Immunization

Period of Life	Procedures
First half year	Smallpox vaccination pertussis inoculations
Succeeding months	Inoculations against diphtheria scarlet fever typhoid fever

TABLE 2—Records for Children Immunized Against Pertussis and Scarlet Fever

Material Used for Immunization	Number of Children Inoculated	Number That Later Had Pertussis or Scarlet Fever	Average Length of Post Immunization Period Years
Sauer's pertussis vaccine	335	2	1.3
Dick scarlet fever toxin	526	4	2.7

duce a naturally acquired immunity, decline when the local prevalence of diphtheria falls is a highly speculative but nevertheless provocative question. Regardless, however, of what the correct answer to this question may be, it seems quite obvious that the practice of administering protective inoculations against diphtheria should be greatly increased.

Evidence which indicates that the immunity to diphtheria produced by inoculating children during a decade characterized by a low local prevalence of the disease tends to persist at a satisfactory level is provided by the results of a survey of 215 Minneapolis children made at the end of an average interval of six and seven-tenths years after they had been rendered negative to the Schick test by inoculations (table 4).

When the follow-up tests were read on the fourth day after their application, 14.9 per cent of the children presented some degree of erythema (table 4). Since control (Moloney) tests were not used, it was impossible to determine whether these erythematous responses indicated a loss of immunity or the presence of a mild degree of sensitivity produced by previous inoculations.

Of greater significance is the observation that 85.1 per cent of the group of 215 adequately immunized children failed to react to Schick tests applied at the end of an average postinoculation period of six and six-tenths years. This fact is interpreted as evidence that the immunity to diphtheria produced in children by inoculations administered during an era characterized by a low morbidity rate for diphtheria usually persists for several years at a satisfactory level. Apparently the retention of an adequate artificially induced protection against diphtheria seems to be largely independent of how the incidence of the disease is shifting in the local environment. If this speculation is correct, diphtheria immunization doubtlessly will supply present and future needs for the specific protection it confers.

Although tuberculosis is a preventable disease, its control is nevertheless difficult. Since the development of a vaccine capable of producing an effective and sustained immunity to tuberculosis probably will remain an experimental problem for many years, the eradication

of this communicable disease doubtless will long continue to be contingent on the prevention of infection with virulent tubercle bacilli. In view of these probabilities, a brief consideration of what perpetuates tuberculosis in man seems to be appropriate.

The first evidence presented here on this point was provided by a tuberculin-sensitive patient who had extensive bilateral pulmonary infiltrations in 1926. The subsequent spontaneous resolution of these lesions, which led ultimately to their reduction to relatively trivial calcified deposits, serves to identify the antecedent infiltrations as examples of the pneumonic stage of tuberculosis of first infection. During the fifth post-infection year, tuberculosis of the lumbar spine developed. In another instance, x-ray study revealed the presence of well calcified hilus glands and a Ghon tubercle in the left lung of a child who also had tuberculosis of the spine. Similar roentgenographically demonstrable deposits, which were interpreted as visible evidence of antecedent tuberculosis of first infection, were found coexisting with tuberculosis of bones and joints in 70.7 per cent of 123 additional patients. These observations seem to provide an answer to the question: Do antecedent infections with virulent tubercle bacilli prevent the occurrence in man of tuberculosis of bones and joints?

The highly communicable chronic pulmonary tuberculosis of the so-called adult type outranks all other forms of the disease as a cause of death and as a menace to the health of the public. Some of the evidence secured at Lymanhurst relative to the antecedent events that are indispensable for the occurrence in man of this important condition is submitted for consideration.

Follow-up studies in 1933 on one patient who was sensitive to tuberculin in 1928 but had no roentgeno-

TABLE 3—Results of Controlled Schick Tests Applied to Freshman Students During 1936*

Total Number of Students Tested	Students with Positive Schick Reaction		Average Age When Tested Years
	Number	Per Cent	
3,205	2,947	70.1	18

Data of Ruth E. Boynton

TABLE 4—Interpretation of Schick Tests Applied to 215 Children Who Previously Had Been Rendered Negative to the Schick Test by Diphtheria Immunization

Interpretation of Schick Test	Patients in Each Group		Average Length of Post Inoculation Period Years
	Number	Percentage	
Marked erythema	1	0.5	9.9
Moderate erythema	22	10.2	7.5
Slight erythema	9	4.2	6.7
Total	32	14.9	7.4
Negative	183	85.1	6.6
Grand total	215		6.7

graphically demonstrable primary disease revealed the development of extensive and ultimately fatal pulmonary tuberculosis. Initial study of a second tuberculin-sensitive patient disclosed nothing but well calcified hilus glands on the right side. Ten years later this child had extensive pulmonary tuberculosis throughout the left lung. In a third typical case x-ray study in 1931 dis-

closed a pneumonic appearing infiltration in the mid-lung field of the left lung. This infiltration resolved spontaneously and left a few calcifications in the region of the hilus. During 1935 extensive phthisis was found in the opposite lung.

Mile posts which identify stages in the evolution of pulmonary tuberculosis are occasionally disclosed when extensive disease is present at the time of the first x-ray study. This is illustrated by a patient whose initial roentgenogram of the chest revealed a well calcified Ghon tubercle at the base of the right lung coexisting with far advanced bilateral pulmonary tuberculosis.

The records of these few illustrative cases exemplify the development of chronic pulmonary tuberculosis as it has been observed to occur in many Lymanhurst children who, previous to the appearance of this serious condition, were sensitive to tuberculin but otherwise seemed to be healthy. These observations on children are considered to be on a par with experiments on animals in suggesting the correct answer to the question: Do antecedent primary infections with virulent tubercle bacilli prevent the occurrence in man of the highly contagious chronic pulmonary tuberculosis of the so-called reinfection or adult type?

Instead of attempting to analyze the relationship of primary tuberculosis to various other reinfection forms of the disease, we desire merely to state that sixteen years of follow-up study conducted at Lymanhurst have produced no evidence that an antecedent infection with tubercle bacilli prevents miliary tuberculosis, tuberculous meningitis, chronic pulmonary tuberculosis, osteo-articular tuberculosis or any of the numerous additional important forms of the disease that occur in man. Apparently the primary tuberculous complex fails to prevent these various conditions in almost the same manner that a syphilitic chancre fails to prevent gummas, tabes dorsalis and dementia paralytica.

These observations lead us to believe that the control of tuberculosis is contingent exclusively on taking advantage of the inability of the causative agent of the disease to perpetuate itself and to survive through successive generations of the human race if the transmission of tubercle bacilli from person to person is prevented.

The promotion of comprehensive programs of control designed to identify human disseminators of tubercle bacilli requires the cooperation of physicians engaged in private practice, who obviously are in an excellent position to survey systematically the personnel of numerous household units. As a preliminary step, the physician may employ the tuberculin test for the purpose of quickly and accurately differentiating the infected from the uninfected members of each unit. Subsequently, the search for the open cases of tuberculosis that obviously require segregation can be completed by conducting periodic clinical, laboratory and x-ray examinations of each patient in whom the preliminary step of the survey disclosed infection.

If this preferred method of thoroughly canvassing the household cannot be financed, there is the economical alternative not only of temporarily deferring x-ray studies and other relatively expensive examinations in instances in which the preliminary tuberculin tests have demonstrated a failure of infected parents to contaminate their respective children, but also of continuing this policy as long as periodic retestings show that infections are not spreading to previously uncontaminated members of the household. According to this plan the

results of initial and follow-up surveys with tuberculin tests are relied on as providing dependable evidence that no open case of tuberculosis is present in the unit concerned. This scheme automatically concentrates the more expensive methods of examination where their use is indispensable, namely, on the tuberculin sensitive members of units in which infected children are present or in which contaminations obviously are spreading. It is used judiciously in conjunction with the preferred plan of thoroughly canvassing households, the economical method for detecting homes in which previously unrecognized human disseminators of tubercle bacilli are present materially augments the scope of surveys conducted in private practice without the aid of special subsidies.

The effective control of bovine tuberculosis accomplished by the American veterinarians, who started in 1920 with herds thoroughly accredited only in the District of Columbia and succeeded during the next two decades in accrediting the herds of practically all states in the Union, suggests that the promotion of a comprehensive program designed to prevent the spread of tubercle bacilli from person to person should have a similar effect on tuberculosis of human origin. Consequently, physicians engaged in private practice are urged to conduct individual tuberculosis surveys on the household units under their care. These surveys, combined with those being sponsored by different clinics and organizations, doubtless should accelerate the eradication of the human source of infection, which now is almost exclusively responsible for the occurrence of tuberculosis in successive generations of man.

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ABSTRACT OF DISCUSSION

DR. LEE FORREST HILL, Des Moines, Iowa. The plan presented for carrying out immunization procedures is important if one is to apply the protective inoculations at the optimum time for greatest effectiveness. It enables one to supplant haphazard programs with definite ones based on known facts concerning the individual peculiarities of the various disease processes. It was not the purpose of the authors to include whooping cough and scarlet fever immunizations among those of unquestioned reliability but rather to indicate the age period when they should be given. Certainly the present evidence points to the need of considerably more support before one can accept either whooping cough or scarlet fever prevention as procedures that can be recommended by the physician as being on the same level of effectiveness with diphtheria and smallpox. My experience with Sauer's vaccine has not been as favorable as the authors'. Of about 200 children given the vaccine, five have subsequently developed whooping cough. While such results should not condemn the method, they have caused me to be cautious in what I promise parents. In considering the desirable age for administering whooping cough vaccine one has in mind the high mortality of this disease in infancy, but on the other hand one remembers the experience of Madsen, who reported one or two fatalities in very young infants, following the inoculations. The suggested age by the authors of 6 months would seem fairly satisfactory. Present knowledge indicates that the optimum age for diphtheria immunization is in the neighborhood of the ninth month. In those situations in which no immunizations have been carried out before this age period has been reached and the question arises as to which should be given first, my own opinion is that preference should always be given to those of proved value, such as diphtheria and smallpox. The proposal of Drs. Stewart and Platou to give the whooping cough and scarlet fever immunizations in a greater number of small doses seems desirable if uncomfortable reactions are to be avoided. I am glad to see the authors include tuberculosis among the list of acute communicable diseases. The epidemiologic features of tuberculosis have not

received the attention they deserve. The tuberculin test is undoubtedly being used much more extensively, but still not to the limit of its possibilities. The plan proposed of regarding the family in which tuberculosis exists in any form as a unit for continuous study with the thought uppermost in mind of detecting the spreader of bacilli or of instituting treatment to prevent future spreading of bacilli is the plan which at the present offers the greatest promise of future control of tuberculosis.

DR. HENRY T. PRICE, Pittsburgh. There are two obvious ways of lessening the local and systemic reactions of immunization procedures: first, modifying the toxin, as in diphtheria toxoid; second, giving the inoculation during the first year of life when the infant's response to the inoculation is mild. The latter method has been less frequently chosen, and one views with interest Stewart and Platou's experiments with pertussis immunization during the first three months of life. It is not clear whether the refractory state in the young infant to certain infections is due to passive immunity transmitted from the mother, to absence of skin reaction, or to an inherent resistance brought about by a unique chemical organization, of the first growth period of life. My observations, concerned mainly with immunization against scarlet fever with a chemical fraction of *Streptococcus scarlatinae*, confirm the observations of Stewart and Platou regarding the decreased reaction during the first and early years of life. A total of 3,000 children in three public school districts tested for susceptibility to scarlet fever showed an average of 50 per cent positive reactors. These reactors have been immunized, two of these groups have been followed for one year, the third group for two years. Practically no systemic reactions have occurred, about half of the older children and adults developed soreness at the site of the injection. Children under 7 years of age received four injections, older children received five. Immunization developed slowly, 70 per cent tested became negative at the end of one year and the remaining 30 per cent required two years to become negative. The various factors responsible for delaying the development of immunity in certain individuals are not at present known, although allergy seems to be an important one. An interesting observation was the almost complete elimination of scarlet fever from a community where a considerable part, but not all, of the susceptible individuals were immunized. It remains to be seen whether the period of protection induced by the immunization against scarlet fever with modified material will be shortened, as is the case with diphtheria toxoid. Artificially produced immunity is probably never absolute and is modified by many factors, among which are general resistance, allergy and race.

DR. HERMAN SCHWARZ, New York. I should like to say a word about the importance of the tuberculin test. For the last seventeen years I have done a test on my children twice a year. I have always been at a loss to understand why even the pediatricians haven't made use of it. I am delighted that the authors brought that up today. It is so simple. When I tried to introduce it into the private school where my children go, I was unable to do it. My old colleagues in New York and elsewhere have said "What's the use?" Of course, when one has domestic servants it is increasingly important. If one of my children should show a positive tuberculin test, I would look for the sources in my household. If we do anything as children specialists, I believe we should certainly popularize this test. As the authors have so well said, as we have done for the animal we should do for man.

DR. CLIFFORD D. SWEET, Oakland, Calif. I want to commend Drs. Stewart and Platou for emphasizing the importance of using the tuberculin test. Every new patient should have a carefully done tuberculin test. All patients who have an annual health examination in the pediatrician's office should have a tuberculin test. I am not going to wait for a child in my family to develop a positive tuberculin test before I examine the servants. I will not take a servant into my house unless that servant first has a physical examination, including a roentgenogram of the chest, and I so advise the parents of the children whom I take care of. When a child has a positive tuberculin test I agree thoroughly that his environment should be searched carefully, including especially the aging grandparents who per-

haps visited six months earlier. I think that three doses of toxoid for immunizing the child against diphtheria are much better than two doses. My own experience is that 1 year of age is a better time than 6 months or even 9 months. I am quite certain that one should not promise parents anything from immunization against whooping cough with Sauer's vaccine, although I am carrying it out as a matter of routine at 8 months of age, saying to the parent that if it will protect the child, even in part, for one year, it is well worth doing. Performed in divided doses, as Drs. Stewart and Platou have indicated, it did not give unfavorable reactions. One should not attempt to do too many immunizing procedures to the infant during the first year of his life. I think that smallpox, diphtheria and whooping cough are enough. Typhoid immunization doesn't last above two years or is not to be trusted, and in the ordinary community, with its usual safeguards, and with pasteurized milk, I think we may let typhoid go. I don't think we should attempt to immunize all children against scarlet fever. I have not yet immunized my first one. I think the rash is an allergic reaction. We are probably protecting them from the rash, while we still leave them susceptible to the infection and all the complications of scarlet fever.

DR. PERCIVAL NICHOLSON, Ardmore, Pa. I take exception to Dr. Sweet's remarks and believe active immunization against scarlet fever practical and of distinct value. In the Philadelphia Hospital for Contagious Diseases in a ten year period (1926-1936) 615 nurses were subjected to the Dick test and positive reactors were given active immunization, none developed scarlet fever. Immunization was discontinued for fourteen months, and twelve nurses developed scarlet fever. After resumption there were no further cases. In nine years (1927-1936) other Philadelphia hospitals not using active immunization sent to the Hospital for Contagious Diseases 196 nurses with scarlet fever. They spent 6,215 days, or seventeen years, in the wards and cost Philadelphia about \$48,000. In a three year period I have Dick tested and immunized 257 children in private practice. Over twenty-five have had known exposure to active scarlet fever with no evidence of infection. Even the mildest case of scarlet fever is often followed by severe renal, cardiac or auditory complications. In a private school epidemic, fifteen boys had scarlet fever. In one of the mildest cases, diagnosed only by throat culture, a severe heart lesion developed and the boy was out of school 127 days. Severe kidney lesions developed in two other supposedly mild cases. A mastoiditis in one necessitated a mastoidectomy, another patient had cervical and mesentery adenitis and later acute appendicitis with an appendectomy. Whether allergic or not, immunization with Dick toxin will prevent clinical scarlet fever with a rash. Quarantine causes a large economic loss, in this private school a loss of 2,000 school days. By preventing clinical scarlet fever one can treat streptococcal infections and allow children to return to school when throat cultures are negative, without prolonged and unnecessary quarantine. However, active immunization probably not only prevents clinical scarlet fever but also the more serious complications of ear, heart and kidney. In the Vineland (N. J.) school for the feeble-minded, during an epidemic of scarlet fever, convalescent serum was used but in ten days new cases developed and there was a 60 per cent positive throat culture rate. Active immunization with Dick toxin terminated the epidemic after the third dose. This rapid termination of epidemics has occurred in several other institutions. If patients are given large amounts of orange juice with dextrose before injections of Dick toxin, and several hours rest afterward, reactions will be very few and mild.

DR. C. A. STEWART, Minneapolis. I should like to say in conclusion that statements relative to the immunity produced by pertussis vaccine should be very conservative. Need for an effective vaccine that prevents pertussis and scarlet fever exists and I trust that continued progress in research will develop new immunizing materials superior to those we now have. Relative to tuberculosis may I add that when testing children in private practice I also apply the Mantoux test to parents. This policy yields information relative to the entire family. Studies indicate tentatively that about one household unit in five in Minneapolis is certified without a single positive reaction in the entire unit.

OBSERVATIONS ON THE MODE OF
ACTION OF SULFANILAMIDE

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AND

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Domagk¹ reported in his original communication on the use of the hydrochloride of 4 sulfamido-2', 4' diamino azo-benzene in the treatment of experimental streptococcic infections of mice that phagocytosis of the streptococci by the leukocytes played an important rôle in clearing the tissues of streptococci in the treated mice. Levaditi and Vaisman² soon afterward advanced the hypothesis (without much experimental evidence) that this chemical interfered with capsule formation, thus rendering the streptococci susceptible to phagocytosis. The Trefouels and their associates³ made the important observation in 1935 that para-aminobenzenesulfonamide was active as a therapeutic agent in curing mice of experimental streptococcic infections. Fourneau and his collaborators⁴ first reported that para-aminobenzenesulfonamide had a bacteriostatic effect on the growth of certain molds.

Colebrook and Kenny⁵ stated that the hydrochloride of 4 sulfamido-2', 4' diamino azo-benzene and the disodium salt of 4 sulfamido-phenyl-2'-azo-7'-acetyl-amino-1'-hydroxynaphthalene-3', 6'-disulfonic acid possessed practically no bacteriostatic effects in vitro but that the serums of patients treated with these dyes possessed bacteriostatic qualities against hemolytic streptococci. In our preliminary communications⁶ we noted the bacteriostatic effect of sulfanilamide in vitro on hemolytic streptococci and suggested that the therapeutic dye compounds might be activated in vivo by reduction. This explanation was arrived at independently by Colebrook and his associates⁷ and by Fuller⁸. Colebrook and his associates⁷ further concluded, on the basis of in vitro tests with whole blood and serum, that the blood and serum of patients treated with sulfanilamide showed bactericidal as well as bacteriostatic qualities. Rosenthal⁹ reported that sulfanilamide was bactericidal for pneumococci.

In a subsequent report we¹⁰ discounted, on the basis of our observations up to that time, the role of bac-

teriostatics in vivo, and, while concluding that the sulfanilamide must act on the micro organism and not on the leukocytes, we were unable to explain the origin of the phagocytosis that was evident in the peritoneal exudates of the treated animals.

Recently, Gross and his associates¹¹ have reported that they are not inclined to believe that the phagocytic activity of the polymorphonuclear leukocytes and monocytes is of importance in controlling experimental streptococcic infections in mice treated with sulfanilamide.

In this present report we shall give experimental observations on the mode of action of sulfanilamide on hemolytic streptococcic and other experimental infections and in view of new data, we must reinterpret our former observations concerning the role of phagocytosis in experimental infections that were treated with sulfanilamide.

METHODS

The following methods were employed in the experimental studies. The cultures of beta hemolytic streptococci used for inoculating mice were twelve to fourteen hour old blood broth cultures from the heart's blood of a mouse which had succumbed to the streptococcic infection. The cultures were incubated at 37°C. Dilutions were always made in beef infusion broth, a different pipet being used for each dilution. Peritoneal exudate was obtained by paracentesis of the mouse's abdomen with sterile glass capillaries. Then films were made of the exudate and these films stained with Wayson's stain and Wright's stain. Capsules were demonstrated by mixing a drop of exudate with a drop of a 2 per cent watery solution of congo red and spreading the mixture with a cigaret paper. The colonial type was determined by inoculating the exudate on the moist surface of freshly prepared chocolate blood-agar plates and incubating the plates for sixteen hours at 37°C. The mouse virulence of the exudate was determined by mixing one drop of the peritoneal exudate with 1 cc of sterile broth and inoculating the whole amount into the peritoneum of a normal mouse.

EXPERIMENTAL OBSERVATIONS

As has already been stated, there is little evidence that sulfanilamide is bactericidal (in the sense of being an antiseptic) in vitro. In table 1 are the results of numerous tests in which a known number of beta hemolytic streptococci were exposed to 0.1 per cent sulfanilamide concentrations in broth or serum broth at icebox temperatures ($\pm 4^\circ\text{C}$) for varying periods of time. The cultures from which the dilutions of the beta hemolytic streptococci were prepared were actively growing twelve to fourteen hour cultures. As will be noted in table 1, there was no evidence that sulfanilamide exerted any bactericidal effect on beta hemolytic streptococci under the conditions that have just been outlined.

Further experiments designed to test the bactericidal effect of sulfanilamide in vitro are shown in table 2. In these experiments the centrifuged sediment from 10 cc of a twenty-four hour beef infusion broth culture was suspended in Tyrode's solution and the same solution to which 0.1 per cent sulfanilamide had been added. After the bacterial population of these solutions had been determined by blood agar dilution plate the suspensions were incubated for twenty hours at 37°C.

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The sulfanilamide used in these experiments was furnished by the Abbott Laboratories, Merck & Co., E. R. Squibb and Sons and the Winthrop Chemical Company, Inc.

¹ Domagk, Gerhard. Deutsche med. Wchnschr. 61: 250 (Feb. 15), 1935.

² Levaditi, C. and Vaisman, A. Comp. rend. Soc. de biol. 121: 803, 1936.

³ Trefouel, J., Trefouel, J. (Mme.), Nitti, F. and Bovet, D. Compt. rend. Soc. de biol. 120: 756, 1935.

⁴ Fourneau, E., Trefouel, J. (Mme.), Nitti, F. and Bovet, D. Compt. rend. Soc. de biol. 122: 562, 1936.

⁵ Colebrook, Leonard and Kenny, Meave. Lancet 1: 1297 (June 6), 1936.

⁶ (a) Long, P. H. and Bliss, Eleanor A. Para-Aminobenzenesulfonamide and Its Derivatives. J. A. M. A. 108: 32 (Jan. 2), 1937.
(b) Bliss, Eleanor A. and Long, P. H. Bull. Johns Hopkins Hosp. 60: 149 (Feb.), 1937.

⁷ Colebrook, Leonard, Bittle, G. A. H. and O'Meara, R. A. Q. Lancet 2: 1323 (Dec. 5), 1936.

⁸ Fuller, A. T. Lancet 1: 194 (Jan. 23), 1937.

⁹ Rosenthal, S. M. Pub. Health Rep. 52: 192 (Feb. 12), 1937.

¹⁰ Long, P. H. and Bliss, Eleanor A. South. M. J. 30: 479 (May), 1937.

¹¹ Gross, Paul, Cooper, F. B. and Peebles, M. L. Proc. Soc. Exptl. Biol. & Med. 26: 311 (April), 1937.

C and the bacterial population of the suspensions were again determined. No evidence was obtained that the death rate of the bacteria suspended in Tyrode's solution was hastened by the addition of sulfanilamide.

Finally, the bactericidal effect of the serums of human beings before and after treatment with sulfanilamide was tested against certain strains of beta hemolytic streptococci *in vitro*. These tests were performed by inoculating 1 cc of the various serums with a loopful of a 1:5,000 dilution (in beef infusion broth) of 9 to 14 hour old cultures of beta hemolytic streptococci. After twenty-four and forty-eight hours of incubation at 37°C, 0.25 cc of each serum was implanted in a poured blood agar plate and after incubation a colonial count was made. In addition, the sulfanilamide content of each serum was determined by the method of Marshall and his associates.¹²

It was noted in the serums taken before treatment that either free growth, partial inhibition of growth or killing took place in certain instances. This was in entire conformity with the recently observed Tillett phenomenon.¹³ In the serums containing sulfanilamide, a partial inhibition of growth at the end of twenty-four hours' incubation was the rule, although in certain serums this was not noted. This particular inhibition of growth (bacteriostasis) of hemolytic streptococci in mediums containing sulfanilamide has been previously described by us and was to be expected. After forty-eight hours' incubation at 37°C the sulfanilamide containing serums showed, as a rule, fewer organisms than did the control serums taken before treatment. This may be evidence of a very feeble antiseptic action of the sulfanilamide or may be due to the exhaustion of the medium. Which of these factors operated in this instance cannot be determined. However, the evidence is clear that the serums of patients treated with sulfanilamide exert little, if any, bactericidal effect on beta hemolytic streptococci *in vitro*.

In an earlier report we^{9a} stated that "phagocytosis of the streptococci by the polymorphonuclear leukocytes plays a paramount role in controlling the infection in the early stages of treatment and that later the monocytes join in this phenomenon." All of our subsequent observations have seemed to confirm the belief that in treated mice the streptococci are eradicated by the phagocytes.

We have repeatedly studied this factor, and in tables 4, 5 and 6 examples of the sequence of changes occurring in the peritoneal exudates of treated and untreated mice are portrayed. In the experiments outlined in table 4, treatment was started ten hours after infection had been initiated by the intraperitoneal injection of 1,000 minimum lethal doses of strain C203. Just before therapy was begun, the peritoneal exudates of the infected mice showed little phagocytosis and varying numbers of free hemolytic streptococci. Seven hours later the peritoneal exudates of the treated group showed many streptococci and marked phagocytosis, while the peritoneal exudates of the control mice in three instances showed myriads of streptococci and no phagocytosis. In the other control mice a moderate degree of phagocytosis was present, but in none was it comparable to that in the treated animals. Fourteen hours after treatment had been initiated, five of the six treated mice showed a decrease in the streptococci

present in the exudate and an appreciable amount of phagocytosis. By that time all the control mice were dead.

Table 5 shows examples of the changes that occur when the infecting dose is not overwhelming (as in the previous experiment) and when treatment is commenced at an earlier period. Under these conditions phagocytosis again seems to be definitely more accentuated in the treated mice than in the controls. Finally, in table 6 are observations made at frequent intervals on the peritoneal exudates of untreated mice. In each instance an increase in the number of free streptococci was noted as time went on, and, while varying degrees of phagocytosis were observed, it never approached the degree seen in the peritoneal exudates of treated mice.

It is important to note at this point that, beginning about twelve hours after infection, there is a progressive decrease in the number of potential phagocytes in the exudate of the untreated animals due, apparently, to the toxic effects of the infectious process. Often, for a few hours before death, only shadow forms and badly damaged leukocytes can be seen. Hence, in untreated mice there is an absolute as well as a relative decrease in phagocytosis as compared with treated mice.

We were interested in determining, if possible, just what happened to the hemolytic streptococci in the peritoneal exudates of treated mice. Table 7 is an example of the effect of treatment on the colonial type, the mouse virulence, capsules, phagocytosis and rate of multiplication of hemolytic streptococci in the peritoneal exudate of treated mice that had been infected by the intraperitoneal route with 100 minimum lethal doses of C203 eleven hours before the observations and treatment were commenced. As will be noted, there was no change in colonial type, the mouse killing power of a drop of peritoneal exudate remained unimpaired, and capsules persisted as long as the mouse survived. This was also true of untreated control mice. It is interesting that while no free cocci were demonstrable and the cultures were sterile from the exudate of mouse 4 from the thirty-sixth to the ninety-fifth hour, a drop of exudate regularly killed normal mice when injected into the peritoneal cavity. The effects of treatment on the multiplication of the streptococci *in vivo* and their phagocytosis by the cells in the peritoneal exudate followed the same pattern as has been previously described. No definite conclusions can be drawn from the experiments, but we feel that at least they present evidence that radical changes in certain characteristics of the mouse-virulent streptococcus are not brought about by treatment with sulfanilamide.

Thus, as a result of our observations on the fate of beta hemolytic streptococci in the peritoneal exudates of experimentally infected mice which have been treated with sulfanilamide, we can only state that an increase in phagocytosis and a decrease in the free cocci has been noted. It is impossible to say as yet whether this effect of sulfanilamide is primarily on the hemolytic streptococci or on the phagocytes.

Recently we¹⁴ have noted that sulfanilamide has a curative effect in mice infected with *Clostridium welchii*. Studies made on the peritoneal exudates of treated and untreated mice have been of great interest. The strain of *Clostridium welchii* which we used to infect mice killed 90 per cent of untreated mice within a few

¹² Marshall E. K. Jr Emerson Kendall Jr and Cutting W. C. *Para Aminobenzenesulfonamide* J. A. M. A. 108: 953 (March 20) 1937.
¹³ Tillett W. S. J. Exper. Med. 65: 147-163 (Jan.) 1937.

¹⁴ Long P. H. and Bliss Eleanor A. to be published.

about fifty cases, and in every instance the lesion has stopped spreading within sixteen hours after the administration of sulfanilamide. Of course, we feel that if one wants to get marked clinical effects one must give the large doses, which we have been giving in Baltimore. With regard to streptococcal sore throat, all I can say is that it seems to be effective. It is very difficult, of course, to set up statistical studies regarding the effect of any drug on streptococcal sore throat. However, in cases that have gone on to a definite peritonsillar involvement, we have noted that sometimes the swelling and edema disappear with startling rapidity when adequate amounts of sulfanilamide have been given. I want to conclude by begging that care be taken in the use of sulfanilamide. Otherwise the administration of sulfanilamide is going to result in many cases of hemolytic anemia and agranulocytosis with fatalities.

THE VALUE OF NEPHROSTOMY AND DECAPSULATION IN ANURIA

GEORGE R. LIVERMORE, M.D.

MEMPHIS, TENN.

In a paper read before the American Association of Genito-Urinary Surgeons in May 1933 I stressed the value of nephrostomy in anuria and reported four cases in which I was successful both in establishing diuresis and in saving life. I also reported a case of anuria due to poisoning with mercury bichloride from Dr. W. H. McNeill's service at Bellevue Hospital in New York City in which the treatment had the same happy result. I now wish to present another successful result, in a case of anuria due to poisoning with saponated solution of cresol.

In 1914 I¹ reported a surgical treatment for anuria which consisted of decapsulation, nephrotomy and packing the pelvis through the nephrostomy wound with gauze saturated with 10 per cent ichthammol in glycerin. I now feel that the pack adds nothing that cannot be accomplished by the nephrostomy tube and decapsulation. Having recently used the method in a case of anuria resulting from poisoning with saponated solution of cresol, with complete relief and restoration to health, I think it is of sufficient interest to report in detail.

Cabot, Boyd and I, among others, have reported favorable results from nephrostomy, but I feel that it is such a valuable and life-saving procedure that repetition and reports of cases may bring it to the attention of some members of the profession who are unaware of the great good that it may accomplish. Cases in which it is of especial value are those in which a desperate condition prevails, e.g., anuria following poisoning with phenol or mercury, acute obstruction with sepsis that it would be too hazardous, or very difficult, to relieve by operation, and calculous anuria, especially in patients with only one kidney who are not relieved by drainage with a catheter. In order, therefore, to obtain the best results, it is essential that nephrostomy be done as quickly as possible with paravertebral block supplemented by as little cyclopropane anesthesia as possible.

TECHNIC

The kidney is freed as rapidly as is compatible with safety and good surgical procedure, an incision made 1 cm. posterior to the convex border of the kidney and the finger passed through it into the pelvis. A 33 to 35

F catheter is then placed in the pelvis through the nephrotomy wound and sutured to the parenchyma with No. 2 plain catgut. The catheter should have an opening in the tip and one on each side just above the tip. The kidney is then replaced and the tube is anchored to the skin with silkworm gut. In cases in which the kidney cannot be freed the nephrotomy wound may be made near the convex border or on the post surface of the kidney.

Cabot's method of making an opening in the pelvis of the kidney and passing a U-shaped sound into this opening and out through the convex border at a point that drains the lower calyx is excellent. I believe, however, that the location of the tube makes little difference if the end with two eyes is placed in the pelvis, because it is the relief of tension due to removal of the capsule and the nephrostomy wound that enables the kidney tubules to function. It is a fact too that, when the ureter is patent, at least as much urine will pass down the ureter to the bladder as is carried off by the tube in the kidney. I have not found it necessary to use a winged or Pezzer catheter and rather hesitate to do so on account of the difficulty of removal.

It is remarkable how well patients progress after bilateral nephrostomy, and they seem to suffer no more than when subjected to a single kidney operation.

Chace and Myers² stated that a patient with 5 mg. of creatinine per hundred cubic centimeters of blood never recovers. In the case here reported the patient had a creatinine content of 7 mg. and practically complete anuria, and nephrostomy and decapsulation were not done till the eighth day following poisoning. As he made a complete recovery, I think the case is worthy of report.

M. L., a white man aged 22, was tall, slender, neurotic and an introvert. He was an only child, pampered and spoiled by the mother. The father had no voice in his management. He had the usual diseases of childhood and typhoid fever when he was 15.

March 24, 1936, at 11 p. m., while on a spree, the patient drank 2½ ounces (75 cc.) of saponated solution of cresol in a high-ball. He was taken by ambulance to the hospital where he was seen in the emergency room by his family physician. He was unconscious, cyanotic and in profound shock. Cardiac stimulants were given and his stomach was lavaged with sodium bicarbonate solution, 1 drachm (4 cc.) to the pint, to which about 2 ounces (60 cc.) of alcohol was added. One half ounce of alcohol in 1 ounce of water was left in the stomach after the lavage. When the patient reached his room his temperature was 100.2 F., pulse rate 140 and respiratory rate 14. Epinephrine, atropine, caffeine, sodium benzoate and digifoline were given at intervals during the night. An air way was introduced and carbon dioxide administered frequently for cyanosis and dyspnea. The patient regained consciousness at 5:30 the next morning, and although his mouth and pharynx were severely burned he drank water and orange juice and ate crushed ice during the day. He vomited many times, and at 9:30 a. m. he voided 12 ounces of dark brown urine and at 1 p. m. 10 ounces more. The urine was acid and cloudy, had a specific gravity of 1.013, showed a 1 plus reaction for albumin, a rare pus cell and no blood cells. By 3 p. m. the patient's mouth and pharynx were so sore and swollen that deglutition became very difficult. There was no urinary output during the night and the following day, but at 1 a. m. on May 27 he voided 4 ounces. May 28 he voided 2 ounces of very dark brown urine. May 29, at 9 p. m., 1 ounce of urine was obtained by catheter. May 30 he voided less than 1 ounce, May 31, 1½ ounces, and June 1, three-fourths ounce.

Read before the Section on Urology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.
1. Livermore, George R. South M. J. 7:322, 1914.

2. Chace, A. F. and Myers, V. C. The Value of Rectal Lavage in the Diagnosis and Treatment of Nephritis. J. A. M. A. 67:929 (Sept. 23) 1916.

I was called to see the patient at 2 30 p m June 1 and ordered 1,000 cc of Fischer's solution to be given intravenously every eight hours, 15 grains (1 Gm) of theobromine with sodium salicylate every three hours and 250 cc of dextrose and soda solution by rectum every six hours. The urine was dark brown had a specific gravity of 1.024, showed a 4 plus reaction for albumin and contained innumerable pus and blood cells and hyaline and both fine and coarse granular casts. The nonprotein nitrogen content of the blood was 200 mg and the creatinine content 6 mg per hundred cubic centimeters. The blood pressure was 170 systolic and 80 diastolic. As there was no improvement after the treatment described I advised nephrostomy and decapsulation, but consent was not obtained till the morning of June 2.

The operation consisted of bilateral decapsulation and nephrostomy. A half inch incision was made through the cortex to the pelvis of each kidney. A 22 F catheter was placed in each pelvis and sutured to the cortex with plain No 1 catgut and to the skin with silkworm gut. The nephrostomy wound was closed to the catheter with No 1 catgut a piece of fat being placed in the kidney wound to control hemorrhage. A cigaret drain was applied to each nephrostomy wound and the incisions closed to the catheters and drains, the muscles and fascia with chromic gut No 2 and the skin with silkworm gut. Both operations were completed in one hour. Five per cent dextrose in saline solution, 1,000 cc,

The Blood Picture After Operation

Date (June)	Day After Operation	Nonprotein Nitrogen Mg per 100 Cc	Creatinine Mg per 100 Cc	Blood Pressure	
				Systolic	Diastolic
2				172	28
3	1st	233.0	7.0		
4	2d	181.0	7.0		
5	3d	175.0	5.0	270	60
6	4th	150.0	4.5	270	60
7	5th	143.0	4.4	176	60
8				166	80
9				178	90
11	9th	90.0	3.7	140	80
14				142	84
15	13th	77.0	2.7	130	70
20	23d	25.0	2.0	134	70

was given intravenously on the operating table and 1,000 cc of Fischer's solution twelve hours later and one of the solutions was given every twelve hours thereafter for four days and then once daily till the tenth day. One cc of U 20 insulin was given daily for 4 days and then 0.5 cc till the administration of dextrose was discontinued. The blood sugar content was never found to be above 125 mg per hundred cubic centimeters. Proctoclysis with 250 cc of dextrose and soda solution was done every six hours during the first day.

In the first twenty-four hours after operation the urinary output was 742 cc, in the second twenty-four hours 2,130 cc in the third twenty-four hours, 2,760 cc and in the fourth twenty-four hours, 4,000 cc.

June 5 a blood count showed red cells 3,390,000 and hemoglobin 70 per cent, therefore 500 cc blood was given by the citrate method and 90 cc of citrate used instead of 60. June 11 the count showed red cells 3,192,000 and hemoglobin 62 per cent, so another transfusion of 500 cc of citrated blood was given.

On the day of operation June 2 the nonprotein nitrogen content of the blood was 200 mg per hundred cubic centimeters and the creatinine content 6 mg. Subsequent values are shown in the accompanying table.

The temperature varied from 102 to 99.4 F from the operation to June 21. It then fell to normal and remained so. The pulse rate was between 140 and 110 until June 16 and then 90 where it remained till July 15 when it was 78.

On the fourth day after operation the patient had a severe convulsion lasting two minutes and two more within the next thirty minutes. Morphine one fourth grain (0.016 Gm) failed to control so chloroform was given with good effect and the administration of morphine repeated. The patient was put in a mustard bath and then wrapped in warm blankets and good diaphoresis was established. No more convulsions occurred.

The patient continued to improve each day, as shown by his general condition, the blood picture and the urinary output. The urine gradually improved until, on July 20, it was free from albumin, casts and blood and contained only a rare pus cell. The nephrostomy tubes were removed on the fourteenth day after operation, and the wounds were completely healed July 20.

The patient has been working daily for nine months as a clerk in a large wholesale hardware store, has not touched any liquor since the night he entered the hospital, and says he never was in better health than he is at the present time.

Medical Arts Building

ABSTRACT OF DISCUSSION

DR NELSE F OCKERBLAD, Kansas City, Mo. The idea of decapsulation came about perhaps fifty years ago, as a result of theoretical considerations. One was to liberate the kidney from the pressure within the capsule, and the other was to try to get new blood supply to the kidney. Edebohl's popularized this method and it had a great vogue for a time and there have been waves of revival of decapsulation from time to time. Just how many of those operated on would recover anyway is a problem of which one is not sure. I think Dr Livermore should be commended on the report of this case and the excellent results obtained. If enough of these cases can be reviewed I believe that some valuable conclusions could be drawn on this subject.

DR A I DOBSON, Richmond, Va. I want to say a word in commending this method of treatment. I have had an opportunity to use it in cases of calculous anuria and in acute fulminating conditions of the kidney in which only one kidney was drained. I feel it is important that Dr Livermore's paper be brought to the attention of internists and men in general practice. In my own service I have on a number of occasions advised and requested the opportunity to do nephrostomy and decapsulation in cases of poisoning in different types of anuria, without the consent of either the family or, most frequently, the doctors who are managing the case. It has been my experience that the internists in my section of the country have little faith in it and fear to submit their patients to such procedure.

DR GEORGE R LIVERMORE, Memphis, Tenn. I think it is an operation that is particularly valuable in certain types of cases. One cannot expect to cure all the cases of poisoning by mercury bichloride and saponated solution of cresol, because the kidney is not the only organ that is damaged. Both the gastro-intestinal tract and the liver come in for a large share of damage and though kidney function is established the patient often dies from other complications. Some years ago Sanford of Cleveland reported two cases of mercury bichloride poisoning successfully treated by this method. It is remarkable that when a nephrostomy and decapsulation are done when the patient has been anuric for some time oftentimes the tube will begin to drip urine even before the patient has returned to his room. I could cite numerous cases in which it has been a life saver in my practice. One patient having bilateral kidney stones and complete anuria from a stone in the right ureter drained 2,000 cc of urine in twenty-four hours following this operation and later I removed the stones from the ureter and both kidneys. Another patient with one kidney came back with complete anuria due to a stricture of the ureter. A catheter could not be passed beyond the stricture in the ureter, but drainage was established through nephrostomy and decapsulation. This patient is alive and well today, nine years after her operation, and is still wearing her nephrostomy tube. In such cases the condition of the patient is critical, and most of them will die unless operated on, but if one does a nephrostomy, one at least gives them a chance to establish drainage which if successful will often bring about happy results.

Healers and Emotional Strain—It is well known by every intelligent person today, layman as well as physician, that many ailments are caused or modified by emotional strain and many forms of treatment by various sorts of healers are successfully practiced on the basis of this knowledge.—Robinson G Canby. The Relation of Emotional Strain to Illness, *Ann Int Med* 11:345 (Aug) 1937.

Clinical Notes, Suggestions and New Instruments

REMOVAL OF POWDER TATTOO BY MINOR SURGERY

H C L LINDSAY M D PASADENA CALIF

Methods of removing gun powder are fairly efficient, it is vastly more difficult to free the skin from powder stains or tattoo marks

The first complete success in the treatment of such a case that I witnessed was carried out on myself by Capt James M Taylor, R A M C I received a black powder blast in the face The shot was fired at close range and thus the powder penetrated the tissues to considerable depths in various places

The removal of the powder grains commenced the same day and proceeded, with the exception of rest periods for three days Antiseptic compresses were applied at night and the following day the work of removal of powder was renewed Serum accumulated around individual grains of powder These were difficult to remove the first day, but the serum seemed to facilitate their removal the following days Inside of three days every grain of powder had been eradicated from the skin and within two weeks no signs of disfigurement were visible

Dr Taylor used a Hagedorn needle, firmly held in a small needle holder, for prying out the powder or scraping out any stain He kept the part moist during the operation with pure alcohol This antiseptic did not obscure his field and he used hydrogen peroxide or pressure to stop any undue hemorrhage and oozing of serum from minute cuts

Until recently this technic for removal of powder grains and stains had proved a satisfactory procedure However, the newer powders are finer grained and have higher explosive coefficients than formerly They actually penetrate deeper into the skin and leave more tattoo marks Not infrequently the powder particles, dust or stain are driven right into the underlying muscles It is necessary to go deeper for these pieces, which show through the skin even though they do go deep

No very great difficulty is experienced in removing these deeper particles of stain or powder if a Bard-Parker cataract

this portion within the area of the horseshoe like cut by means of the fine splinter forceps to steady it while the cutting on the far side of the area and the underneath is completed Even with a sharp knife, one must allow for some give to the tissue and on this account a slightly wider cut is made Otherwise minute specks are apt to be missed on this far edge

It is a good plan to remove all the powder grains at first and the stains at subsequent sittings Most large areas can be divided up into numerous smaller areas, each bounded by healthy unaffected skin Removal of areas of tissue or skin

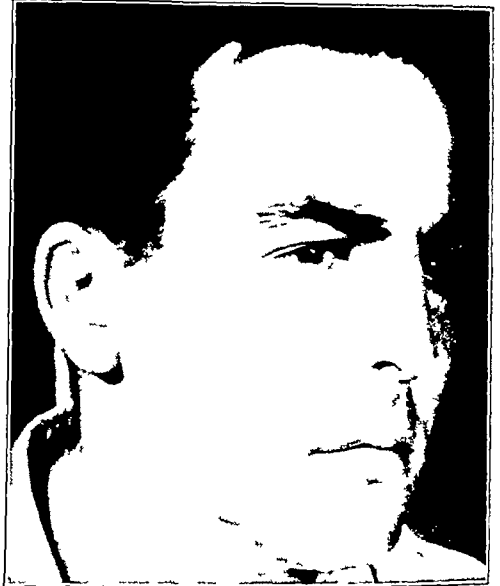


Fig 2—End result of removal of powder tattoo from the skin

less than the surface size of an ordinary biopsy punch is attended by but little, if any, disfigurement Ordinarily no anesthetic is required, but a clear, mild antiseptic is important Chloral hydrate dissolved in pure ethyl alcohol is suitable for this purpose The delicate eye knife speedily dulls during use and it is necessary to change blades often in order to do good work and especially to prevent pain

It is seldom indeed that a suture is required to close a wound The finest linen is most satisfactory for sewing the skin when necessary but should be removed within three days Fish-line adhesive strips are of value to hold parts together very thin strips of adhesive plaster such as will retain parts in position and still allow exudation to take place between strips may be used

The after-dressing is simple The parts are covered with bismuth formic iodide powder and then covered lightly with gauze held in place by adhesive plaster if the lesions are on the body If only the face is involved I prefer to cover the area with an antiseptic powder and leave it exposed to the air as much as possible However exigencies make this impracticable sometimes, more especially in ambulatory cases in which predicament I use the same technic as mentioned for the body

REPORT OF CASE

M B a youth aged 20 single an American college student had had excellent general health with the exception that there was a scar on his neck from the removal of tuberculous glands in his early youth During experiments with an especially finely pulverized high explosive gun powder, the cannon used for the experiments was demolished by an explosion Powder grains and stains were blown into the patient's face including nose lips tongue ears and chest but none into the eye The powder grains were mostly removed by surgical knife The patient was referred to me for removal of the powder tattoo This was accomplished by the technic described The explosion occurred Feb 14 1935 and the last of the stain was removed by April 14 1935

509 First Trust Building



Fig 1—Disfiguring powder stains in the skin of the face before their removal by minor surgery

knife is used for cutting them out The smallest size splinter forceps is useful in removing loosened specks Thus having selected a small tattoo spot to be removed the operator renders the area as aseptic as possible and puts tension on the skin with one hand while he cuts carefully around the tattooed powder spot to a depth slightly deeper than the powder stain has penetrated The blade must be new and keen When two thirds of the circle has been completed it is advisable to seize

Special Article from the American Medical Association Chemical Laboratory

THE FOLLOWING REPORTS ON THE CHEMICAL AND PHARMACOLOGIC EXAMINATIONS OF ELIXIR OF SULFANILAMIDE MASSENGILL ARE ISSUED UNDER THE AUSPICES OF THE A M A CHEMICAL LABORATORY. IN ADDITION THERE ARE INCLUDED REPORTS OF CERTAIN NECROPSIES AND A SUMMARY OF REPORTED DEATHS UP TO AND INCLUDING FRIDAY OCTOBER 29

PAUL NICHOLAS IEECH DIRECTOR
A M A CHEMICAL LABORATORY

ELIXIR OF SULFANILAMIDE- MASSENGILL

CHEMICAL, PHARMACOLOGIC, PATHOLOGIC AND
NECROPSY REPORTS, PRELIMINARY TOXICITY
REPORTS ON DIETHYLENE GLYCOL AND
SULFANILAMIDE

I INTRODUCTION

On Monday, October 11, telegrams were received from Dr James Stevenson, president of the Tulsa County Medical Society, and from the Springer Clinic of Tulsa, stating that six deaths had occurred following the administration of Elixir of Sulfanilamide-Massengill, all cases having in common the pathologic condition of complete anuria. The telegrams inquired concerning the composition of the Elixir of Sulfanilamide-Massengill. In response, information was telegraphed that no product of the S E Massengill Company stands accepted by the Council on Pharmacy and Chemistry and that the Council had recognized no solution of sulfanilamide. The reason for the latter statement is that the Council is not in position to accept a solution of sulfanilamide until there is adequate evidence that it is both stable and does not contain toxic material in the doses recommended. The A M A Chemical Laboratory immediately sent for specimens of Elixir of Sulfanilamide-Massengill. Two specimens were received from Tulsa, Okla., of the same solution which, it was stated, had been given to patients. A telegram was sent to the S E Massengill Company asking for the composition of the product. The firm gave the composition with the request that it be accepted confidentially. With this clue the Laboratory immediately tested the first preparation that was received. Information was telegraphed to Dr H A Ruprecht of the Springer Clinic of Tulsa, suggesting the presence of diethylene glycol as the causative factor, the presence of which was confirmed by the Laboratory in the specimens examined. Original specimens were also obtained on the open market in Tulsa and a gallon of the elixir was ordered from the manufacturer. This was shipped promptly. Preliminary animal experiments were also made which indicated diethylene glycol is the toxic agent. A report of deaths in East St Louis Ill., was obtained from Dr O E Hagebusch, pathologist at St Louis. The composition of several specimens of Elixir of Sulfanilamide-Massengill appeared to be the same, the number of deaths in Tulsa had increased and reports from St Louis of additional deaths indicated that the episode was not simply one of local character. The editor of THE JOURNAL then released a general warning to the public through the daily papers and over the radio. This warning was issued Monday, October 18, based on the editorial

which appeared in the October 23 issue of THE JOURNAL, at the earliest possible moment after the facts were established.

Since then the headquarters group of the American Medical Association has had much assistance and cooperation from Dr E M K Geiling and Dr Paul R Cannon of the University of Chicago, and Dr J Howard Brown, Dr Perrin Long and Dr E K Marshall Jr of the Johns Hopkins University, from Mr W G Campbell, chief of the U S Food and Drug Administration, and from Mr J O Clarke, chief of the central division of the U S Food and Drug Administration. By close cooperation between the government and the American Medical Association, reports of deaths were immediately checked by both agencies. Furthermore, the government traced every shipment of Elixir of Sulfanilamide-Massengill

ONE
GALLON

ELIXIR


ONE
GALLON

SULFANILAMIDE

Each fluidounce represents
Sulfanilamide, 40 grs

**SUGGESTED FOR THE TREATMENT OF ALL CONDITIONS
IN WHICH THE HEMOLYTIC STREPTOCOCCI APPEAR**

Dose, begin with 2 to 3 teaspoonfuls in water
every four hours. Decrease in twenty four
to forty eight hours to 1 or 2 teaspoonfuls
and continue at this dose until recovery



THE S E MASSENGILL COMPANY
Manufacturing Pharmacists
BRISTOL, TENN.-VA.

Label of gallon bottle of Elixir of Sulfanilamide-Massengill. The presence of diethylene glycol was not declared on the label. The dosage recommended should be noted particularly the last statement and continue at this dose until recovery. This phrase is tragically ironical in view of the number of deaths reported.

Wherever any material had been dispensed from a bottle efforts were made to find out to whom it had been administered and to give adequate warning in case the patients were still alive. Acknowledgment is also made to Dr H A Ruprecht and Dr I A Nelson of the Springer Clinic, Tulsa, who furnished the first complete statement of the postmortem examinations, to Dr Darwin B Childs of the Childs Clinic, Tulsa, who forwarded to the A M A Laboratory specimens of the Elixir of Sulfanilamide originally dispensed, and to Dr O E Hagebusch of St Louis for forwarding his results.

II

CHEMICAL EXAMINATION OF ELIXIR OF
SULFANILAMIDE-MASSENGILL

E W SCHOEFFEL, PH D

H R KREIDBERG, PH D

AND

J B PETERSON, PH D

CHICAGO

A bottle stated to contain Elixir of Sulfanilamide-Massengill, shipped by Dr Darwin B Childs of Tulsa Okla., was submitted to the A M A Chemical Laboratory for examination. The bottle bore the name of the Quaker Drug Company, Rexall Drug Stores of Tulsa.

The bottle contained approximately 50 cc of a reddish somewhat viscous liquid, having an aromatic odor resembling raspberry and anise, a sweet taste and resembling glycerin in general physical character. The specific gravity of the substance was 1.1247 at 23 C. The surface tension was 53.8 dynes per centimeter and the index of refraction was 1.442 at 23 C.¹ A portion of the material was subjected to high vacuum distillation 10⁻⁶ mm (distillation range 70-95 C.) most of the distillate coming over at 75 C. After removal of water the distillate amounted to approximately 72 per cent by volume of a clear, viscous liquid having an index of refraction surface tension and boiling point the same as that for a known specimen of pure diethylene glycol (purchased on the open market). The residue was found to consist of sulfanilamide with small amounts of soluble saccharin, and coloring material such as amaranth or similar dye. The odor resembled anise and raspberry. A trace of alcohol was indicated. The residue when examined by microchemical means was found to consist essentially of sulfanilamide.² When the latter was subjected to fractionation and tested by means of the Kofler microchemical melting point apparatus, the fractions were all found to give essentially the same melting point showing that the sulfanilamide had not decomposed in this solution.

Spectrographic examination failed to reveal the presence of such poisonous substances as lead bismuth mercury and arsenic. Quantitative examinations yielded the following:

	By Volume
Diethylene glycol (approximately)	72 per cent ³
Sulfanilamide (approximately)	10 per cent Weight/Volume
Water (approximately)	15.6 per cent

Chemical examinations were also made on material from the original bottles from Tulsa and on material from a gallon bottle sent by the manufacturer. The resultant figures based on these determinations corresponded closely with the figures given above.

ANALYTICAL PROCEDURE

A measured amount is subjected to high vacuum distillation between 10⁻⁶ or 10⁻⁷ mm of mercury using a fractionation attachment and an all glass ground joint apparatus. The outside bath should not exceed 130 C. The boiling of the liquid begins at room temperature (25) suggesting a small amount of low boiling material. With the rise of the inside thermometer to 30 C the receiver is changed. It contains some of the aromatic flavor substances (probably esters ethanol etc). Between 30 and 65 C most of the water comes over into the CO₂-acetone cooled receiver. With the use of a Tesla coil the end of the distillation of the water is followed up. As soon as the bright bluish discharge of the hydrogen color disappears the receiver is changed again (temperature of the distillation flask between 45 and 65 C). The thermometer now goes up rapidly to 95 and comes back to 75 C. Again the receiver is changed. At 75 the liquid comes over at a moderate rate. From now on until the end the receiver is changed two times more following the drop in the rate of flow. The distillation is interrupted and the complete dry material is dissolved in as little boiling water as possible. On cooling crystallization sets in. The crystalline mass is triturated with a small amount of ice water and

sucked dry on an outside ice packed Buchner funnel. The dry liquid gives on evaporation a second yield of crystals. The dry crystalline material containing some of the dye and saccharin is successively extracted with absolute peroxide free ether in a Soxhlet extractor followed by dry absolute amyl alcohol which dissolves the sulfanilamide. The mother liquors of the fractions are evaporated and again recrystallized. All the crystalline fractions are subjected to melting point determinations to check the purity of the sulfanilamide. A decomposition product was obtained at the end of this preliminary report. Further work is in progress.

Conclusions—From the foregoing examination it appears that Elixir of Sulfanilamide-Massengill is essentially a mixture containing approximately 9 to 10 Gm of sulfanilamide dissolved in 100 cc of a solution consisting of diethylene glycol 72 per cent by volume and water 15.6 per cent by volume, to which had been added a small amount of soluble saccharin, coloring such as amaranth or similar dye flavoring resembling raspberry and anise, with an extremely small amount of reducing substances. This is in close agreement to the statements of the manufacturer that elixir of sulfanilamide contains 40 grain of sulfanilamide in one ounce of fluid and that the diethylene glycol approaches 75 per cent of the volume.

"SYNTHETIC" ELIXIR

A synthetic preparation was also prepared for the purpose of pharmacologic investigation (this is the material referred to in the reports of Dr E M K Geiling and Dr Paul K Cannon which follow). The synthetic preparation consisted of diethylene glycol 75 per cent by volume sulfanilamide 10 per cent weight/volume, 0.2 per cent soluble saccharin and 0.2 per cent cochineal, and water to make 100 cc. This product was compared by means of the refractive index and surface tension and specific gravity with (a) the specimen reported on in the foregoing paragraph, (b) the contents of an original pint bottle of Elixir of Sulfanilamide-Massengill and (c) the Elixir of Sulfanilamide-Massengill received directly from the manufacturer. The determinations on the index of refraction specific gravity and surface tension of the several mixtures indicated that they were similar.

III

PRELIMINARY REPORT OF TOXICITY STUDIES
ON RATS RABBITS AND DOGS

FOLLOWING INGESTION IN DIVIDED DOSES OF DIETHYLENE
GLYCOL, ELIXIR OF SULFANILAMIDE-MASSENGILL
AND "SYNTHETIC" ELIXIR

E M K GEILING MD

JULIUS M COON, AB

AND

E W SCHOEFFEL, PH D

CHICAGO

Toxicity experiments were carried out on rats, rabbits and dogs on the following substances:

- 1 Pure diethylene glycol
- 2 Pure sulfanilamide
- 3 Elixir of Sulfanilamide-Massengill
- 4 Synthetic elixir of sulfanilamide compounded by the

A M A Chemical Laboratory with pure substances in approximately the same proportions as found in the Massengill elixir (see Chemical Laboratory report)

Our experiments were devised to determine:

- 1 The toxic and lethal doses of each of the substances given in relatively small doses three times daily. This information seems particularly necessary since we were not able to find any data in the literature on this specific point.
- 2 Our experiments were further planned with the hope of being able to reproduce in healthy experimental animals about the same time the clinical and pathologic picture as presented by patients who had taken fatal doses of the Elixir of Sulfanilamide-Massengill.
- 3 Through our experiments we hoped to discern the toxic ingredient in the Massengill elixir.

All animals were healthy adults of both sexes and had free access to food and water. The drugs were administered

From the Department of Pharmacology University of Chicago
Dr C W Muhlberger Mr J O Austin and Mr A R Burroughs
valuable assistance

Contribution from the A M A Chemical Laboratory

1 Compared with water 72 at 22.5 C

2 Sulfanilamide is the name adopted by the Council for the product para-amino-benzene sulfonamide. It was introduced into the United States under the proprietary term Prontosil a brand of sulfanilamide manufactured by the Winthrop Chemical Company. It should not be confused with Prontosil which may be considered a derivative of sulfanilamide. The word Prontosil unfortunately has been used to describe several substances. Prontosil Album is used in some foreign countries as a proprietary name for sulfanilamide.

3 In the different specimens examined the diethylene glycol content varied from 70 to 75 per cent by volume.

istered by stomach tube in the dosages stated in the tables. The doses selected ranged from apparently non-toxic to surely fatal ones.

From table 1 it will be seen that rats were given diethylene glycol in doses ranging from 0.5 to 4 cc, Elixir of Sulfanilamide-Massengill¹ in doses of from 0.625 to 3 cc, and "synthetic" elixir in doses of from 2.66 to 3 cc per kilogram of body weight three times daily. Most animals receiving the 0.5 cc doses survived for eight days in apparently good health. A few, however, were beginning to show ill effects at the time of writing. About 20 per cent of the animals receiving 1 cc of diethylene glycol or Massengill elixir have died. All animals receiving doses of 2 cc or more of any one of the foregoing died in from two to five days with a terminal anuria. The following is an average clinical picture as seen in rats. After about the fourth dose the animal's fur becomes ruffled, there seems to be increased thirst and diuresis, food is refused, later urine excretion becomes scanty, finally the animal lies on its side, respirations increase in rapidity and depth and anuria sets in, followed by coma and death. Rabbits present essentially the same picture (table 2) but seem to be more sensitive than rats. Dogs too, behave similarly (table 3), but the dosage cannot be accurately determined because the animals vomit after the administration of both diethylene glycol and the elixirs.

Thus far we have found rats and rabbits to be more satisfactory experimental animals for this purpose than dogs.

Experiments were also performed in which sulfanilamide alone was administered by stomach tube to twelve dogs in divided doses of 0.2 Gm per kilogram three times daily, for eight doses. At the end of this period the animals were divided into three equal groups, A, B and C. In group A two animals, dogs 2 and 4, were killed in order to see whether any significant pathologic changes had occurred in the kidneys or liver (see pathologic report). Dog 2 of group A had convulsions after the sixth dose of sulfanilamide alone but recovered. At necropsy no marked liver or kidney injury was seen. Dog 4 had no untoward reactions after administration of the sulfanilamide and showed no striking pathologic change at necropsy. The remaining two are still receiving sulfanilamide in 0.2 Gm doses three times a day and are showing no untoward effects. Group B is receiving Massengill elixir three times daily in doses containing 0.2 Gm of sulfanilamide. Two animals in this group refused food after the second dose, the third dog ate but vomited and the fourth ate and retained the food. Group C is receiving the "synthetic" elixir three times daily in doses containing 0.2 Gm of sulfanilamide. In this group, two dogs refused food, the third ate but little and vomited and the fourth ate and retained food after the second dose. The animals in both groups B and C that refused food are obviously sick at present.

Two additional dogs are receiving diethylene glycol alone in divided doses in an amount comparable to that of the diethylene glycol in the elixirs. One dog began vomiting after the second dose and at present he

is moribund. The other animal began vomiting after the fifth dose and is showing weakness and tremors of the hind legs. Observations on these animals are being continued and a more detailed report will be forthcoming.

A similar experiment was carried out on sixteen rats, all of which received 0.25 Gm per kilogram of sulfanilamide three times daily for seven doses. At the end of this period the animals were divided into four equal groups. Two rats of group 1 were killed for pathologic study and the other two continued on the same treatment of sulfanilamide. Group 2 received 2.5 cc of Elixir of Sulfanilamide-Massengill per kilogram, group 3, 2.5 cc of "synthetic" elixir per kilogram, group 4, 1.9 cc of diethylene glycol per kilogram. All animals were dosed three times daily with the amount per kilogram mentioned. At the end of the fourth day all but three rats in groups 2, 3 and 4

TABLE 1—Data Obtained from Rats Treated Three Times Daily with Various Doses of Diethylene Glycol, Elixir of Sulfanilamide-Massengill and Synthetic Elixirs and Sulfanilamide

Drug	Dose per Kg Three Times a Day	No of Rats	Total No of Doses	Total Amount of Drug Given per Kg	Deaths	
					Num- ber	Per Cent
Diethylene glycol	0.5 cc	4	24	12.0 cc	0	0
	1.0 cc	2	24	24.0 cc	1	37.3
	1.0 cc	2	13	13.0 cc	1	50
	2.0 cc	7	21	14.0 cc	3	71
	2.0 cc	7	8	16.0 cc	3	100
Elixir of sulfanil- amide-Ma-sengill	2.5 cc	4	8	18.0 cc	4	100
	3.0 cc	3	7	21.0 cc	3	100
	4.0 cc	2	2	20.0 cc	2	100
	0.625 cc	4	24	15.0 cc	1	25
	1.25 cc	3	24	30.0 cc	0	0
Synthetic elixir	2.5 cc	2	10	25.0 cc	2	66.6
	2.66 cc	4	9	24.0 cc	4	100
	3.0 cc	4	7	21.0 cc	4	100
	2.66 cc	4	8	21.3 cc	4	100
Sulfanilamide	3.0 cc	7	8	24.0 cc	4	100
	3.0 cc	7	7	21.0 cc	3	100
H O controls	0.2 Gm	2	24	6.0 Gm	0	0
	1.0 Gm	2	13	13.0 Gm	0	0
H O controls	5 cc	2	24	120.0 cc	0	0

Comment. The rats were kept in cylindrical 12 inch cages in groups of from two to four; these cages were placed on 12 inch funnels and the urine flow was observed in order to determine onset of anuria; food and water were available at all times.

were dead and these are expected to die on the fifth day. The two rats remaining in group 1 are apparently normal. The clinical course and the gross pathology were essentially similar in all the animals of groups 2, 3 and 4. Anuria was uniformly present. This experiment indicates clearly that it is the diethylene glycol and not the sulfanilamide which is the toxic agent.

A series of rats were also given diethylene glycol and the two elixirs of sulfanilamide in single large amounts of 5, 10 and 15 cc per kilogram by stomach tube. After forty-eight hours all the rats of the 15 cc doses were dead. After three days all the rats on the 10 cc dose of the two elixirs had died, but only one of the three on the diethylene glycol was dead. All rats on the 5 cc dose of the three preparations are seemingly well after five days (they will be killed for pathologic study). This series is too small at present to warrant any definite conclusions. We are, however, prompted to remark that it is possible that if the kidneys and the liver are rapidly injured by a large critical dose (10 cc) of diethylene glycol, the sulfanilamide, especially in large amounts may not be eliminated

¹ In the experiments here reported the doses are larger than those used by human beings. The doses were selected to produce death in animals in about the same time and with the same symptomatology as occurred in the human beings taking the Massengill elixir. Experiments are now in progress with doses lower than 0.5 cc per kilogram given three times daily. These experiments are indicated in view of the fact that Haag and Ambrose reported that rats succumbed when from 5 to 10 per cent of diethylene glycol was administered in the drinking water. Holck and Carlson found that rats succumbed after nine days when 4 per cent of diethylene glycol was given in the drinking water (unpublished data which we are permitted to quote).

or detoxified and may have an injurious action on other tissues. In this way sulfanilamide may then be regarded as having an additive toxic effect. This is suggested as a possible explanation for the fact that some of the rats on the 10 cc amounts of diethylene glycol sur-

vived, while the animals on the elixirs succumbed. Additional experiments will have to be made to settle this point, which we believe to be interesting but is in conflict with our view that it is the diethylene glycol which is the important toxic factor (1) in the elixir

TABLE 2—Data Obtained from Rabbits Treated Three Times Daily with Various Doses of Diethylene Glycol Elixir of Sulfanilamide-Massengill and Sulfanilamide

Cage No.	Number of Rabbit	Sex	Weight kg	Drug	Dose per kg, T i d	Total Dose T i d	Total Number of Doses	Total Amount of Drug Given per kg	Total Amount of Drug Given	Time of Onset of Symptoms	Symptoms in Order of Appearance	Time of Death
1	1	♀	2.7	Diethylene glycol	0.5 cc	1.5 cc	20	10.0 cc	27.0 cc	72 hrs	Loss of appetite, lassitude, diuresis, increased respiration, symptoms progressed slowly until death	91 hr
2	2	♀	2.6	Diethylene glycol	1.0 cc	2.6 cc	8	8.0 cc	20.8 cc	40 hrs	Loss of appetite, diuresis, weakness, increased respiration, anuria, coma, death	61 hrs
2	2B	♂	2.4	Diethylene glycol	1.0 cc	2.4 cc	8	8.0 cc	19.2 cc	36 hrs	Loss of appetite, diuresis, weakness, increased respiration, anuria, coma, death	60 hr
3	3	♂	2.4	Elixir of sulfanilamide-Massengill	0.67 cc	1.6 cc	20	13.4 cc	32.0 cc	60 hrs	Slight loss of appetite, slight weakness, symptoms progressed slowly until death	10 hrs
4	4	♂	2.7	Elixir of sulfanilamide-Massengill	1.34 cc	3.7 cc	8	10.7 cc	29.6 cc	36 hrs	Same as in cage 3	8 hrs
4	4B	♀	2.6	Elixir of sulfanilamide-Massengill	1.34 cc	3.5 cc	6	8.0 cc	21.0 cc	30 hrs	Same as in cage 3	8 hr
5	5	♀	2.3	Elixir of sulfanilamide-Massengill	2.0 cc	4.7 cc	6	12.0 cc	28.2 cc	30 hrs	Same as in cage 3	45 hrs
5	5B	♂	3.2	Elixir of sulfanilamide-Massengill	2.0 cc	6.4 cc	5	10.0 cc	20.0 cc	30 hrs	Same as in cage 2	41 hr
6	6	♂	2.5	Sulfanilamide	0.2 Gm	0.5 Gm	20	4.0 Gm	10.0 Gm	36 hrs	Pallor in ears	Rabbit died after 1 day

Comment: All rabbits were kept in well cleaned metabolic cages with water and food available; all doses were given by stomach tube.

TABLE 3—Data Obtained from Dogs Treated Three Times Daily with Diethylene Glycol Elixir of Sulfanilamide-Massengill and Sulfanilamide

Number, Age, Sex, and Race of Dog	Weight kg	Drug	Dose per kg, T i d	Total Dose T i d	Total Number of Doses	Total Amount of Drug Taken per kg	Total Amount of Drug Taken	Time of Onset of Symptoms	Symptoms in Order of Appearance	Time of Death	Comment
1* 10 mo male police dog	11.3	Diethylene glycol	1.5 cc	16.9 cc	6	9 cc	101.4 cc	20 hrs	Weakness in hind legs, drunken gait, general lassitude, loss of appetite, increased respiration, diuresis, vomiting, thirst, anuria, coma, muscular tremors, spasms, delirium (barking), death	86 hrs	Kept in cage with free access to food and water; removed to metabolic cage after 6 hr to observe development of anuria
Dogs 1 and 2 were litter mates											
2 10 mo male police dog	11.5	Elixir of sulfanilamide-Massengill	2 cc	23 cc	6	12 cc elixir (9 cc diethylene glycol, 1.2 Gm sulfanilamide)	138 cc	20 hrs	Same as above except death followed convulsions after feeding of milk by stomach tube; autopsy revealed no milk in bronchi	62 hrs	Kept in metabolic cage until death; cage kept clean; animal had free access to food and water
3 20 mo male terrier	8.1	Sulfanilamide	0.2 Gm	1.62 Gm	6	1.2 Gm	9.7 Gm	24 hrs	No loss of appetite; slight general lassitude with rapid and complete recovery after cessation of administration of sulfanilamide		On the 6th day this dog weighed 10.5 kg., a gain of 1.4 kg. at the beginning of the experiment

* Dr. Julian Finkelberger of the Lasker Foundation, the University of Chicago, kindly made the following determinations on the blood of this animal obtained at death:

Chloride	693	Total prot in	61.7 Gm per liter of serum
Sodium	142 mM per liter of serum	Nonprotein nitrogen	1.2 Gm per liter of serum
Potassium	13.6 mM per liter of serum	Albumin	2.1 Gm per liter of serum
		Globulin	0.9 Gm per liter of serum
	1.42	Water	0.05 Gm per liter of serum

Note the low protein and the high nonprotein nitrogen and potassium. The changes in blood chemistry are proof of the terminal uremia of the experimental animal. Through the courtesy of Prof. H. Cideon Wells, director of the Otho S. A. Sprague Institute, the University of Chicago, Dr. Carl Markert is cooperating with us in a more detailed study of the fate of diethylene glycol in the animal body and the change in the blood chemistry following ingestion of the drug. Renal and liver function tests will also be carried out on animals treated with diethylene glycol. More complete studies of the rate of elimination of sulfanilamide when administered as the elixir will be carried out.

of Sulfanilamide-Massengill when given to human subjects in the amounts recommended on the label, and also (2) to our experimental animals when given in divided smaller doses. We are planning to repeat the foregoing experiments and also will give a large single amount of diethylene glycol, to be followed by a large single amount of sulfanilamide, accompanied by chemical determinations.

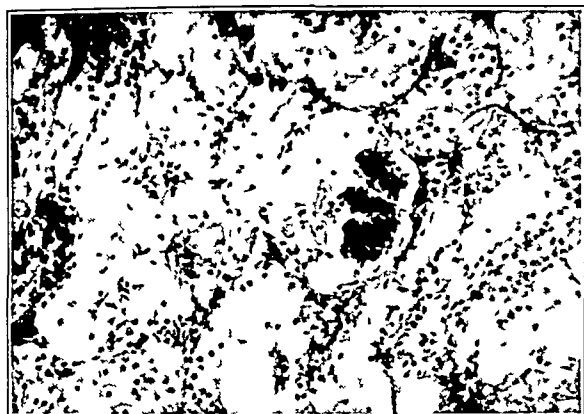


Fig 1—Kidney of rat that ingested 3 cc per kilogram of the synthetic elixir of sulfanilamide three times daily. Killed in a moribund condition after fifty three hours.

Mr Millberg, of our department, made numerous differential blood counts on animals receiving sulfanilamide alone, Elixir of Sulfanilamide-Massengill "synthetic" elixir, and pure diethylene glycol. He did not find evidence which would indicate agranulocytosis.

We are privileged to say that Dr Herbert O Calvery, chief pharmacologist of the Food and Drug Administration, Washington, D C, and his staff are conducting experiments which are in general accord with our own observations. Their results will be published in detail.



Fig 2—Kidney of rat that ingested 4 cc per kilogram three times daily of a 33 1/3 per cent solution of pure diethylene glycol. Killed in a moribund condition after forty five hours.

There are of course many other ramifications of this problem which have not been touched on in this preliminary report.

SUMMARY AND CONCLUSIONS

1 Our experiments thus far warrant the belief that diethylene glycol is the toxic agent in the Elixir of Sulfanilamide-Massengill examined because experimental animals given diethylene glycol alone exhibit essentially the same clinical course and path-

ologic changes in the kidney and liver as do those treated with similar doses of the Elixir of Sulfanilamide-Massengill or a "synthetic" elixir containing the ingredients and in the same proportion found in the Massengill preparation by analysis. There are, of course, individual and species differences. Thus far we have found the rat and the rabbit more satisfactory subjects than the dog because with them emesis is not a complicating factor.

2 Sulfanilamide alone if given in doses of 0.2 Gm per kilogram three times daily does not prove fatal to rats, rabbits or dogs after eight or more divided doses. However, if sulfanilamide is given in this dosage in the form of Elixir of Sulfanilamide-Massengill or in the "synthetic" elixir, it proves fatal to experimental animals and presents a clinical and pathologic picture closely resembling that reported for the human cases in which death occurred after ingestion of the Massengill elixir.

3 Although animals receiving sulfanilamide in doses of 0.2 Gm per kilogram three times daily did not succumb, several of them had convulsions. Six animals (two dogs and four rats) were killed after

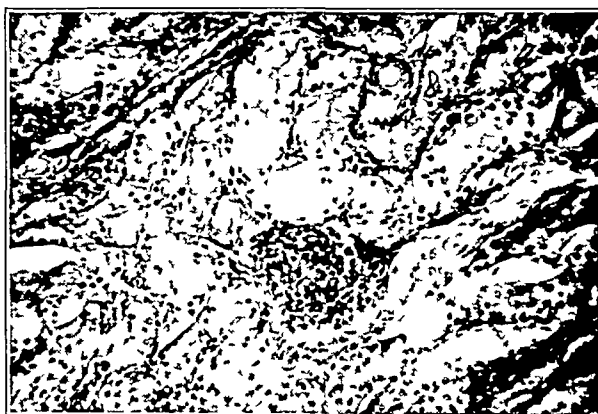


Fig 3—Kidney of dog that ingested 15 cc per kilogram of pure undiluted diethylene glycol three times daily. Died in eighty six hours.

having received eight or more divided doses of the drug. None of them had anuria, nor did they exhibit the renal and hepatic changes found in animals treated with either the Massengill or the "synthetic" elixir (see report of pathologic observations). While we do not believe that the sulfanilamide had any important part in the intoxications resulting from the elixir of sulfanilamide, one must not overlook the possible damage to tissues that may result when sulfanilamide is administered to experimental animals or to human beings with impaired renal function. This point is being investigated.

4 Our experiments emphasize the importance of administering drugs in divided doses to experimental animals when it becomes necessary to know whether or not a drug has cumulative effects. Errors resulting from an oversight of this important pharmacologic principle may be costly in human lives.

We can confirm the finding of Harg and Ambrose—that the ingestion of 15 cc of diethylene glycol per kilogram in a single dose by stomach tube proves fatal to rats. This figure however is no index of the toxic and possible fatal effects of the drug if administered in small divided doses, especially since neither the fate

nor the mechanism of detoxification is known. This substance possibly produces injury to certain cells at a rate faster than the repair processes take place, hence each succeeding dose may be adding insult to injury.

[NOTE—After this article went to press a communication was received from Dr. E. K. Marshall, Jr. too late for inclusion in this report. In this communication he discussed the results in his experiments to date in reference to diethylene glycol, Elixir of Sulfanilamide-Massengill, and sulfanilamide. In general his experiments show that sulfanilamide alone is not responsible for elixir deaths. Large doses of sulfanilamide administered to rats and dogs revealed no functional kidney damage.—P. N. L.]

IV

PATHOLOGIC EFFECTS FOLLOWING THE
INGESTION OF DIETHYLENE GLYCOL
ELIXIR OF SULFANILAMIDE-MAS-
SENGILL, 'SYNTHETIC' ELIXIR
OF SULFANILAMIDE AND
SULFANILAMIDE ALONE

PAUL R. CANNON, M.D.
CHICAGO

Preliminary studies have been made of organs from dogs, rats and rabbits given toxic doses stated to be Elixir of Sulfanilamide-Massengill, "synthetic" elixir of sulfanilamide, and diethylene glycol. The present

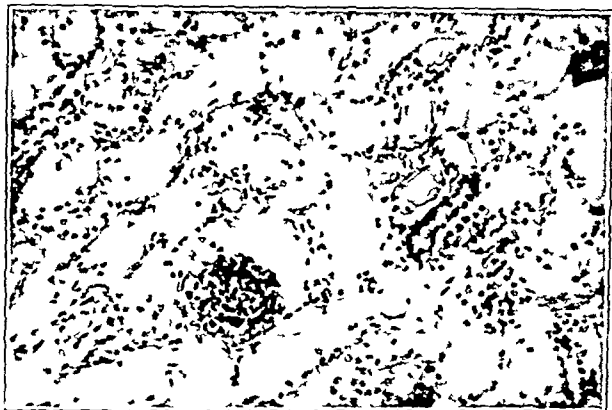


Fig. 4—Kidney of rabbit that ingested 2 cc. per kilogram three times daily of Elixir of Sulfanilamide-Massengill. Killed in a moribund condition after forty-eight hours.

report deals particularly with animals that died or were killed in a moribund state after ingestion of varying amounts of these materials. The general appearances at necropsy were as follows. The kidneys were swollen with tense capsules and bulging bloody surfaces, containing, in some instances, small areas of recent hemorrhage. The cortices were swollen and were usually pale. The heart was dilated and the body as a whole showed marked acute generalized passive congestion. The liver was frequently mottled and bloody but was not greatly enlarged. Pulmonary edema or bronchopneumonia was present. Clear fluid was occasionally present in the peritoneal and pleural cavities. The urine was clear and pale yellow. The gastro-intestinal tract appeared essentially normal. The leptomeningeal veins were distended and the brain was tenser than usual with in some instances an increase in subdural spinal fluid.

From the Department of Pathology, the University of Chicago.
Dr. H. G. Wells gave valuable counsel.

Microscopically, the most marked changes observed thus far have been in the kidneys and liver. In the former there is an intense hydropic degeneration of the epithelium of the convoluted tubules, so marked that the lumens are obliterated and the normal structure is greatly altered. Albumin and hyaline casts are present within the lumens of both convoluted and collecting

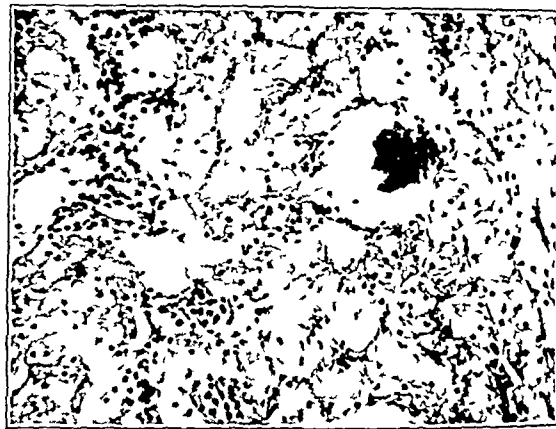


Fig. 5—Kidney of rat that ingested 3 cc. per kilogram three times daily of Elixir of Sulfanilamide-Massengill. Died in fifty-eight hours. In figures 1 to 5 note the hydropic degeneration of epithelium of convoluted tubules, the precipitated albumin in their lumens and the casts. Note also the shrunken but relatively unchanged glomerular tufts and the absence of leukocytic infiltration or vascular damage.

tubules. In some animals the epithelium of the convoluted tubules is necrotic and the cells have disappeared. The collecting tubules are relatively unchanged although fat stains show varying degrees of fatty degeneration. The glomerular tufts are shrunken, although their capillaries are filled with blood. Albumin is also present in many of the glomerular spaces. Leukocytes are inconspicuous. The arteries, arterioles and venules appear normal.

Sections of livers show hydropic degeneration of hepatic cells most marked around the centers of the lobules. Fatty changes are present but are not



Fig. 6—Liver from rat that ingested 4 cc. per kilogram three times daily of pure undiluted diethylene glycol. Died in thirty minutes. Note the hydropic swelling of hepatic cells with their shrunken nuclei and the absence of leukocytic infiltration.

noticeable in the areas of hydropic degeneration at the borders of the hydropic areas. Necrosis of liver cells is not severe, although there is some shrinkage of nuclei, pyknosis and nuclear fragmentation. Leukocytic infiltration is minimal.

A few sections from the lungs show marked congestion, edema and bronchopneumonia. The myocardium

appears essentially normal, although fat stains in some instances show an early fatty degeneration. Other organs have not been examined microscopically as yet, nor have the tissues from animals receiving nonfatal doses of diethylene glycol.

The general picture is that of a severe chemical nephrosis with intracellular edema of most of the epithelial cells of the convoluted tubules, resulting in tubular obstruction by compression and by the intraluminal formation of casts. The pathologic picture is essentially similar in the three species of animals, whether given the Elixir of Sulfanilamide-Massengill, the "synthetic" elixir of sulfanilamide or diethylene glycol alone. This intracellular edema in the kidneys leads to internal disorientation of cells of the convoluted tubules and offers an explanation for the tubular obstruction, anuria, uremia and death. Whether this intracellular change is due to cellular anoxia, with consequent intracellular edema, necrosis, fatty degeneration and cellular desquamation, or whether it is due to hygroscopic properties of diethylene glycol are questions that must await further investigation.

These changes in the kidneys and liver are not due to sulfanilamide alone. We have examined sections from two dogs and four rats given sulfanilamide in divided doses, with toxic manifestations in one dog. The microscopic changes are slight, consisting of moderate fatty degeneration in some of the collecting tubules of the dogs, but minimal in the rats. The livers of both dogs and rats showed no hydropic degeneration and practically no fatty degeneration. There is but little question, therefore, that the severe chemical nephrosis of the dogs, rats and rabbits is due to diethylene glycol alone. We cannot say, however, that under conditions of anuria, with retention of sulfanilamide in the blood stream, some tissue damage by sulfanilamide may not be added to that of diethylene glycol.

We have had the opportunity to examine organs from five persons who died in or near St. Louis after ingestion of Elixir of Sulfanilamide-Massengill. There is a striking similarity between the pathologic changes in the kidneys and livers in these cases and in those of the experimental animals given Elixir of Sulfanilamide-Massengill, the "synthetic" elixir, or diethylene glycol alone. The most striking changes in the human cases are hydropic degeneration of the convoluted tubules with desquamation of epithelium, fatty degeneration, tubular necrosis, hemorrhage, and obstruction of tubules by casts. In one case there is also marked recent infarction with hyaline thrombi in many of the smaller arteries. The lobular hydropic degeneration of hepatic cells is also a prominent feature in the livers from these patients.

The accompanying photomicrographs show the characteristic pathologic changes in the kidneys and livers of rats, dogs and rabbits given Elixir of Sulfanilamide-Massengill, "synthetic" elixir, or diethylene glycol. Figures 1, 2, 3, 4 and 5 show the hydropic degeneration of epithelium of the convoluted tubules, figure 6, the lobular hydropic degeneration of hepatic cells in the liver. These are all from frozen sections of formaldehyde-fixed tissue stained with hematoxylin and eosin with a magnification of 260 diameters.

Conclusion—There is a marked similarity in the pathologic picture in animals and in man following the ingestion in divided doses, toxic to the species, of a lethal amount of Elixir of Sulfanilamide-Massengill in man, or of diethylene glycol, the "synthetic" elixir, or Elixir of Sulfanilamide-Massengill, in animals.

V

CLINICAL AND PATHOLOGIC OBSERVATIONS
BY DR. HOMER A. RUPRECHT AND
DR. I. A. NELSON, TULSA

[The following telegram (October 15) was received at the A. M. A. headquarters from Dr. Homer A. Ruprecht and Dr. I. A. Nelson of the Springer Clinic.]

Total of ten cases. Eight dead. One recovered. One critical. Ages from eleven months to twenty-six years. All received Elixir Sulfanilamide in amounts varying from one-half to seven ounces. Characteristic onset with nausea, vomiting, occasional diarrhea, malaise, later pain over kidney region and abdomen. All developed anuria within two to five days after beginning medication. Indications for the use of sulfanilamide were varied. Nine cases hospitalized. Characteristic physical findings were deep respirations, drowsiness, cutaneous pallor, no cyanosis, slight puffiness of face. Blood pressure normal or slightly elevated, tenderness over kidneys and upper abdomen. Three cases voided small amounts of urine which showed four plus albumin, casts and cells insignificant, no lipoids, no anemia, moderate leukocytosis, non-protein nitrogen progress to near two hundred total, creatinine up to twelve. Patients become progressively comatose. Edema and ascites related to water administration. Death in two to seven days from onset of anuria. Postmortem findings on five cases are yellow tawny color of smooth and not enlarged liver, slight to marked purplish mottling of kidney surfaces, with severe cases showing necrosis limited to superficial portions of cortex. Inconstant peritoneal, pleural and pericardial accumulations of clear straw colored fluid which gels. Rest of viscera insignificant. Microscopic findings show a consistent hydropic tubular nephrosis and central degeneration of liver with cells showing foamy cytoplasm. Sudan stains show (little) fatty degeneration. Consider microscopic picture similar to literature on dioxane, see Navanquez, J. Hyg. vol. 35, pages 540-548. Cannot find evidence of oxalic acid in gross nonmicroscopic tissues nor fluids. No calcium oxalate crystals¹. Have complete viscera from one case in frozen state without fixation. Can send stained sections, portions of fixed or frozen tissues. Federal inspectors arrived today.²

VI

NECROPSIES OF FOUR PATIENTS FOLLOWING
ADMINISTRATION OF ELIXIR OF
SULFANILAMIDE-MASSENGILL

O. E. HAGEBUSCH, M.D.
ST. LOUIS

[Without knowledge of the deaths at Tulsa, Okla., Dr. O. E. Hagebusch sent the following report under date of October 19 for proposed publication in THE JOURNAL.]

In the last several days I have seen four deaths in patients using a product called "Elixir of Sulfanilamide" and sold by Massengill & Company.

¹ A suggestion had been telegraphed to Dr. Ruprecht October 12 that possibly there might be oxalate crystals in case the diethylene glycol contained ethylene glycol.

² In a letter from Dr. Ruprecht of October 11 he stated: "One of the latter two patients had received tablets of sulfanilamide over a period of two weeks without any bad effects and then changed doctors and the second doctor put him on the elixir of sulfanilamide and the typical train of symptoms followed shortly afterward."

Dr. Darwin B. Childs of Tulsa, Okla., in speaking of cases brought to his attention stated: "A patient, a 20-year-old adult who had an acute gonorrhea, took a total of 220 grains as represented by 55 teaspoonfuls of the elixir of sulfanilamide. Twenty-four hours after the ingestion of this amount he began to have symptoms of an acute nephritis and forty-eight hours later he was totally anuric. He died four days after receiving the last dose. The clinical picture and autopsy reports of this case closely resemble each of the other cases."

THE CHEMICAL LABORATORY

These patients, all Negroes, were treated by a Dr Weathers of East St Louis, Ill. In all he has given the drug to about thirty people, but of the six people treated recently four are dead and have come to autopsy. One is expected to die at any time, and one may recover.

All have had similar symptoms vomiting and diarrhea, subnormal temperatures, slow respiration, anura edema of the face, hands and feet, a progressive anura and then death. All four autopsies have shown the same findings, pulmonary edema, marked nephritis with hemorrhage in the

John A. Jr
Nov 6

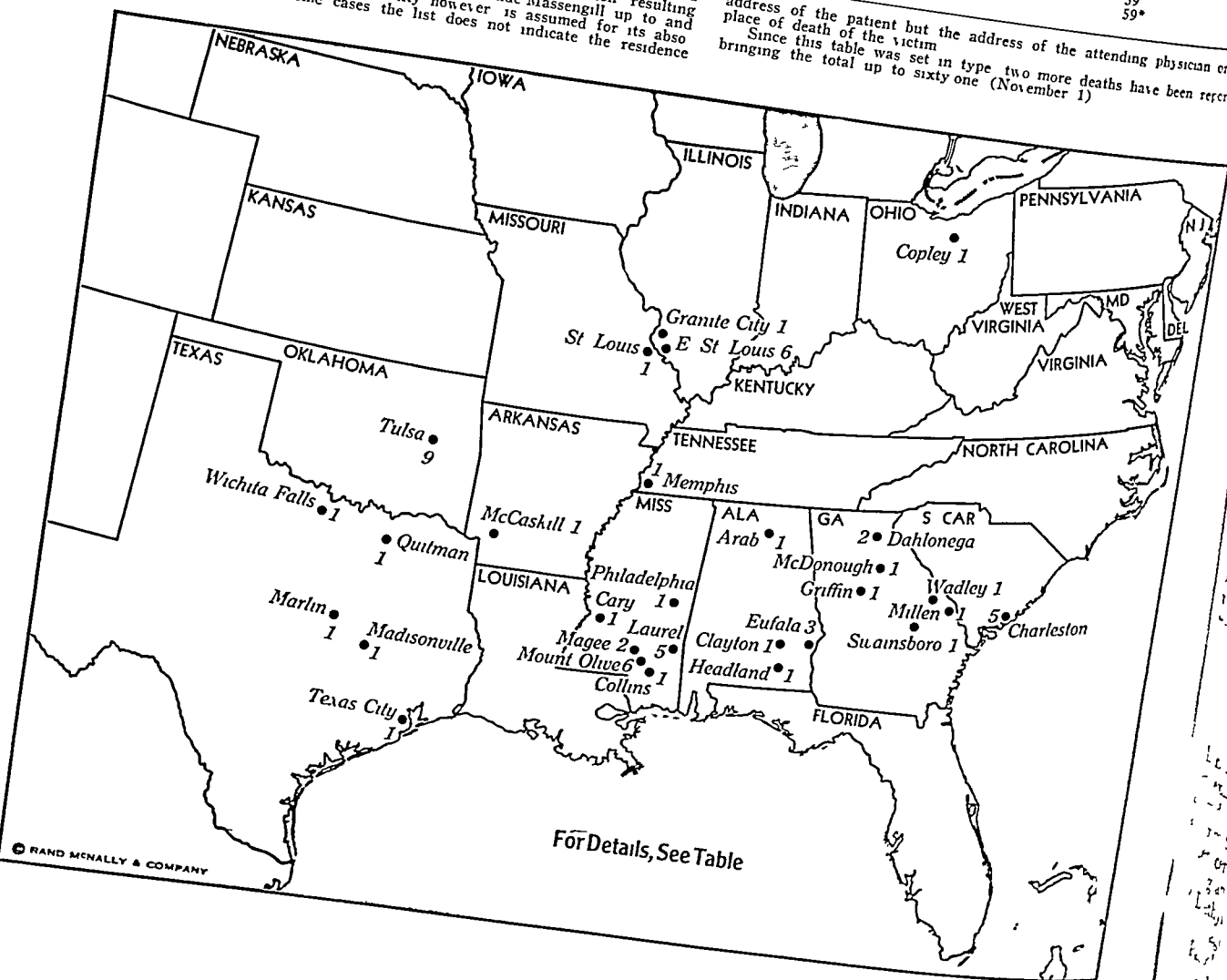
Reported Deaths from Elixir of Sulfanilamide-Massengill

State	City	Reference Number	Demise
Alabama	Arab	1	10 16 37
	Clayton	2	9 24 37
	Eufaula	3	9 20 37
Arkansas	Eufaula	4	10 13 37
	Headland	5	10 17 37
	McCaskill	6	9 25 37
Georgia	Dahlonega	7	10 24 37
	Dahlonega	8	9 29 37
	Griffin	9	10 19 37
Illinois	McDonough	10	10 18 37
	Millen	11	10 6 37
	Swainsboro	12	10 16 37
Mississippi	Wadley	13	10 26 37
	East St Louis	14	10 21 37
	East St Louis	15	10 15 37
Missouri	East St Louis	16	10 16 37
	East St Louis	17	10 18 37
	East St Louis	18	10 18 37
Oklahoma	Granite City	19	10 21 37
	Cary	20	10 24 37
	Collins	21	10 10 37
South Carolina	Laurel	22	10 17 37
	Laurel	23	10 9 37
	Laurel	24	10 5 37
Tennessee	Laurel	25	10 5 37
	Laurel	26	10 11 37
	Philadelphia	27	10 20 37
Texas	Nagee	28	no date
		29	10 20 37
		30	10 5 37

State	City	Reference Number	Demise
Missouri	Magee	31	10-1, 3,
	Mount Olive	32	10 8-3,
	Mount Olive	33	10-14-3,
Ohio	Mount Olive	34	10-16-3,
	Mount Olive	35	10 19 3,
	Mount Olive	36	10 20 3,
Oklahoma	St Louis	37	10 21 3,
	Copley	38	10-25 3,
	Tulsa	39	
South Carolina	Tulsa	40	
	Tulsa	41	
	Tulsa	42	
Tennessee	Tulsa	43	
	Tulsa	44	
	Tulsa	45	
Texas	Tulsa	46	
	Tulsa	47	
	Tulsa	48	
Total Deaths	Charleston	49	10 4 3,
	Charleston	50	10-17 37
	Charleston	51	10 13 37
Wichita Falls	Charleston	52	10-30-3,
	Marlin	53	10 30 37
	Quitman	54	10 20 37
	Texas City	55	10-18 3,
		56	10 17 37
		57	10 20 37
		58	
		59	
		59*	

* To the best of our knowledge this list comprises the deaths confirmed by telephone telegraph or other authoritative communication resulting from the administration of Elixir of Sulfanilamide Massengill up to and including October 29 no responsibility however is assumed for its absolute correctness. In some cases the list does not indicate the residence

address of the patient but the address of the attending physician or the place of death of the victim. Since this table was set in type two more deaths have been reported bringing the total up to sixty one (November 1)



For Details, See Table

the cortex of the kidney, marked hemorrhage into the pericardium, mucosa of the stomach and duodenum and into the serous surfaces of lung and liver. The liver is pale, edematous and enlarged. Microscopic sections have not as yet been completed.

It was thought that this information should be in the hands of as many physicians as possible, and THE JOURNAL was the best means of accomplishing this end.

VII

SURVEY OF DEATHS

Deaths and clues of deaths were reported to the American Medical Association headquarters by various press services, by information received from physicians, and chiefly clues from the Food and Drug Administration. The latter organization placed a tremendous force of inspectors in the field. It obtained a list of approximately 700 shipments from the manufacturer. The inspectors then traced every shipment to its final designation. If the bottle had been opened, they inquired to whom it had been dispensed. It was in this manner that most of the deaths were traced after the original reports from Tulsa and East St. Louis. Each suspected case of death was then checked by the American Medical Association by telephoning or telegraphing physicians or other medical authorities. On an accompanying page is given the list of cities in which deaths occurred, the number of deaths reported to the Association to October 29, and the date on which it has been stated that the patient died. There are many additional reports not confirmed as yet.

Antidote—On October 20 the S. E. Massengill Company sent the following telegram:

Please wire collect by Western Union suggestion for antidote and treatment following use Elixir Sulfanilamide.

The following reply was sent:

Antidote for Elixir Sulfanilamide-Massengill not known.
Treatment presumably symptomatic.

So far as has been determined, there is no known antidote for diethylene glycol poisoning when the drug is administered in amounts comparable to that given the unfortunate victims. Telegrams were sent to Dr. E. J. Marshall Jr., Dr. W. F. von Oettingen and Dr. P. J. Hanzlik for suggestions. One suggested the use of gastric lavage, calcium therapy orally and intravenously, and symptomatic treatment for nephrosis. Another telegraphed: "Cannot suggest any possible antidote or treatment for patient with Elixir Sulfanilamide poisoning. Fifty per cent dextrose solution with or without sodium bicarbonate intravenously might be tried." Another suggested the use of 20 per cent dextrose solution intravenously to relieve renal edema if possible.

VIII

CONCLUSIONS

1 Elixir of Sulfanilamide-Massengill in the specimens examined was found to consist essentially of sulfanilamide 10 Gm in 100 cc of a solution of approximately 72 per cent diethylene glycol and water 25 per cent by volume, to which had been added flavoring and coloring material.

2 Diethylene glycol in the doses given was the causative agent in deaths.

3 Pathologic results reported herewith both on animal and on man, as well as many reports received by telephone and telegram, indicate that, in cases of

death following the administration of Elixir of Sulfanilamide-Massengill, anuria was present.

4 While sulfanilamide does not appear to have had any appreciable part in the toxicity of this preparation, it is well to emphasize again that sulfanilamide should be used cautiously and, until more is known of its pharmacology, should not be administered concurrently with any other substance except sodium bicarbonate (see editorial in THE JOURNAL, October 2, p. 1128, and reports by the Council on Pharmacy and Chemistry in THE JOURNAL May 29, p. 1888, and July 31, p. 358).

5 Diethylene glycol, when taken in divided doses and in amount comparable to those recommended by the manufacturer for Elixir of Sulfanilamide-Massengill, is a decidedly toxic substance and cumulative poison; the pathologic picture was the same in animals that received a 75 per cent solution of diethylene glycol alone, a synthetic mixture made of 10 Gm of sulfanilamide in 100 cc of a 75 per cent solution of diethylene glycol, and the Elixir of Sulfanilamide-Massengill.

Special Article

MEDICAL PATENTS

MORRIS FISHBEIN, M.D.

Editor of the The Journal of the American Medical Association
and of Hygeia the Health Magazine
CHICAGO

In the Principles of Medical Ethics of the American Medical Association it is stated quite plainly that:

It is unprofessional to receive remuneration from patents for surgical instruments or medicines, to accept rebates on prescriptions or surgical appliances, or perquisites from attendants who aid in the care of patients.

Through the centuries medicine has given freely of its discoveries for the benefit of mankind. Vaccination against smallpox, inoculation against hydrophobia, digitalis and innumerable other methods and medicaments became the property of all who cared to employ them in the control of disease. Now as medicine has become more complex, involving technical assistants in the fields of biochemistry, physiology, physics and associated branches, great numbers of people who give their full time to the work of the hospital, the laboratory or the care of the sick work with the medical profession but are not bound in any way by the same ethical principles.

Research workers in many universities have developed preparations and techniques in their laboratories at considerable expense to the institution. Workers in some instances have seen fit to turn over to the universities the control of such products. In other instances universities have refused to accept such responsibilities and the worker has taken some other method of administering the control of his discovery.

LACK OF UNIFORMITY

There appears to be no uniformity in the approach to this problem or in the decisions and rulings of various institutions on this subject. Insulin is controlled by the governors of the University of Toronto. Scarlet fever preparations are controlled by the Scarlet Fever Committee, Inc. Vitamin D preparations by irradiation are controlled by the Wisconsin Research Alumni Foun-

dation of the University of Wisconsin, the Spertin patents for vitamin D by the University of Cincinnati, the Zucker patents for vitamin D by Columbia University, the Doisy patents for theelin by St. Louis University School of Medicine, and several others covering drugs by Stanford University and the University of California.

In 1934 a special committee of the American Association for the Advancement of Science recognized the desirability of obtaining patents for purposes of control. It pointed out that the act of securing patents for medical discoveries is not unethical in itself and that such act does not necessarily mean that personal profits are sought. It recognized the desirability for a patent in order to protect a manufacturer who wished to develop a product on a large scale. It recognized the tremendous expense which might be involved in developing an invention and the use of a patent to recoup the money spent in research. It recognized, finally, the right of a university with limited funds for research to use patents developed in its laboratories for encouraging further research.

Not only does the University of Toronto administer the insulin patent but in association with the university there is a pediatric research foundation which derives funds from discoveries that are used in the university for research.

The University of California administers the product called tethelin, developed by Robertson, formerly professor of chemistry and pharmacology. This patent is administered by a committee of five members of the faculty under the control of the regents of the university.

The board of trustees of the University of Pennsylvania in 1934 established the policy that any invention or discovery which may in any way affect the public health, such as a new drug, process or apparatus intended primarily for medical or surgical use, should not be patented for profit, either by the individual in the employ of the university or by the university itself. In order to prevent capitalization and exploitation by others, it is pointed out, the executive committee may from time to time consider it advisable to patent inventions or discoveries with the sole intent of protection without profit. In a later resolution it was stated that patents may, with the approval of the president of the university, be applied for, covering other inventions or discoveries, in which case the inventor shall assign his rights to the patent to the university on its paying the expense of securing the patent. Furthermore, it was left to the executive committee to determine what proportion of the profits, if any, should be given to the individual concerned, except that no profit was to be derived from patents or discoveries that may in any manner affect the public health.

Columbia University has set up an administrative board of medical patents with authority to accept or direct the development of discoveries made in its laboratories. This board is empowered to make arrangements for the use, manufacture, sale or other disposition of patents or discoveries. St. Louis University controls the Doisy patents on theelin and from the funds derived makes grants for research. The University of Illinois provides for the assignment of patents to the university and has set up committees for control, likewise Lehigh University. Harvard University has no specific rule about patents, except that no

member of the medical school or of the school of public health is permitted to take out a patent for his own profit or take any profit on a patent or on any invention or discovery that affects the health of individuals or of the public. If, however, to protect the public against misuse of the invention or discovery it becomes necessary to obtain a patent, it is possible to apply for it under such a name or conditions as the corporation or board of governors of the university may determine. The Johns Hopkins University in 1933 through the advisory board of the medical faculty went on record to the effect that it was undesirable for any member of the medical faculty to take out a patent on any discovery that might affect the public health. The University of Michigan provides also for the control of patents. Under the regulations of the Massachusetts Institute of Technology, any inventions resulting directly from research become the exclusive property of the institute, which, it is understood, the institute will administer for the benefit of the public. In case the institute decides not to acquire these rights, all or a part of them goes to the individual who made the invention.

The University of Minnesota has several patents and it has been held that it is not improper to use the control of patents as a means of adding to the research funds of the university. The thyroxine patent is one in the field of public health which this university controls. The University of Cincinnati has a large number of patents covering the preservation of food and in a recent decision has reserved to itself all medical discoveries to be administered for the public good. In 1932 Cornell University also arranged through a separate corporation to administer patents but has made no decision as to the distribution of royalties. The iodobismutol patent, now controlled by Stanford, is to be administered for the support of research in the medical school.

POINTS OF VIEW OF NATIONAL ORGANIZATIONS

In addition to the stipulations made by various universities, this problem has been considered by many national organizations in the field of science. The National Research Council permits the acquiring of patents arising from work which it has supported and the dedication of such patents to the public good. In fact, it announces the policy that those who make discoveries will apply for patents and that such patents will be assigned to the National Research Council.

The Carnegie Institution announced in 1923 its expectation that new and useful inventions or discoveries which resulted from research that it financed would be dedicated to the public use and that such patents would be assigned to the Carnegie Institution.

The Rockefeller Institute has recognized the necessity of patenting for purposes of control with the understanding that administration will be for the public good and that all such funds will be devoted to public purposes. Tryparsamide is one of the products on which the Rockefeller Institute holds a patent.

The Mellon Institute, which is largely supported by funds from commercial donors, controls patents with a contract whereby the discoveries are patented by the worker and the patent turned over to the donor, who makes the regulations as to control. This institute holds some 500 patents. Under the regulations of the Chemical Foundation, patents are assigned to the foundation which then administers them under a licensing system.

setting aside a portion for the disposal of the discovery and the remainder for research

This subject, which has attracted so much attention for so many years, has also been commented on by many of the leaders in the field of medical thought. In 1927 Dr Hans Zinsser pointed out that the relief of the sick and the prevention of unnecessary sorrow by the maintenance of individual and public health are not to be compared with the invention of improvement in the mechanism of automobiles or of a shoe buckle. Any procedure that prohibits the most rapid and useful application of a discovery to the needs of a community would seem to be as unjustified as cornering the wheat market.

METHODS BY WHICH MEDICAL INVENTIONS CAN BE PATENTED

In its survey of this subject the American Association for the Advancement of Science outlined the methods by which medical inventions can be patented in this country.

(a) Methods of medical treatment are in general difficult to patent, because the Patent Office is very reluctant in granting such patents. It appears that the courts have not definitely decided whether this type of invention is patentable. An old decision of the Patent Office held such patents to be contrary to public policy.

(b) Any remedial compound which is nothing more than such a mixture of medicinal agents as could be made by the exercise of the ordinary skill of a physician is not patentable. In the past, the Patent Office granted many patents for all sorts of remedial compounds, which were hardly more than physicians' prescriptions or at best were mixtures of known remedial compounds. Many of these patents were used as a means of exploiting the public with false claims and pretenses. The Patent Office today therefore refuses to grant patents for this type of remedial compound unless it can be shown that an entirely new and unforeseen result is obtained and that the ingredients coact to produce an entirely new result.

(c) New chemical compounds, organic and inorganic, having some remedial value can generally be patented. A large number of medicinals on the market are patented. The new compound is patentable as such and not necessarily as a medicine.

(d) Certain biological products and the processes for producing them may also be patentable. The Dick patent for scarlet fever toxin is a good example.

(e) Processes for manufacturing chemical compounds are patentable when they are novel and have not been previously used, known or described in the literature.

(f) The discovery of the medicinal or other properties of known compounds can in some instances be protected by a patent.

(g) Instruments, apparatus and so on, used in medical and surgical practice can also be patented.

Our patent laws are very liberal with regard to medicinal inventions as compared with those of European countries. In France, it is stated, pharmaceutical compositions or remedies of all kinds are excluded from protection. In Germany articles of food, medicines and substances manufactured by a chemical process are not patentable so far as the inventions do not relate to a distinct process of manufacturing such products. In England, it is said, foods and medicines are not patentable per se but the methods of manufacturing them may be patented. It should be pointed out that control of the process is just as effective as the patent of an article itself and that in many instances monopoly may be maintained by copyright of a well established name which is better than a monopoly dependent on the protection of a patent against infringement.

ATTITUDE OF AMERICAN MEDICAL ASSOCIATION

The attitude of the American Medical Association with regard to patents, aside from the inclusion of the clause already quoted in the Principles of Medical Ethics, was expressed by the House of Delegates in June 1914. The Judicial Council at that time recommended the adoption of the following resolution, which was thereupon duly adopted by the House of Delegates:

Resolved That the Board of Trustees of the American Medical Association shall be permitted to accept, at their discretion, patents for medical and surgical instruments and appliances and to keep these patents as trustees for the benefit of the profession and the public, provided, that neither the American Medical Association nor the patentee shall receive remuneration from these patents.

The Board of Trustees of the Association has not, however, as yet accepted any patents or endeavored to work out any plan for the administration and control of patents in the medical field. Since 1914, at various times, committees have been set up by the Board to study the problem and to report. No such final reports have, however, thus far been made available.

ADVANTAGES AND COMPLICATIONS IN TAKING OUT OF PATENTS

There are many arguments which may be made for and against the taking out of patents. When a patent is granted, those who control the patent regulate the production of the product so as to insure its quality. The owner of the patent may control the price to a considerable extent, thereby preventing exploitation. The owner of a patent may limit the production of the goods to organizations capable of making the best possible product and eliminate those capable of such production.

One of the chief complications in this field in recent years has developed from the fact that inventions or discoveries are far more frequently the result of the efforts of a number of workers than of any single discoverer and that in many instances only one of the group of workers may be a physician unauthorized to accept remuneration, whereas all of the others, because they are pharmacists, chemists, biochemists, physicists or physiologists, are not inhibited by such principles of ethics as control the medical profession.

In an earlier day, the doctor who developed a new device or appliance would manufacture a few with the aid of some neighboring blacksmith or carpenter. In modern times, industry is capable of turning out many thousands of units, in contrast to the ten or fifteen that might have been used formerly. Insulin was developed by biochemists, physiologists and a practicing physician. Certainly the name of Banting, the physician, is as much to be credited for the discovery of insulin as the names of his colleagues Macleod, Collip and Best. It is no secret that it became necessary to patent this discovery in order to control it, that Banting received one dollar for the sale of the patent to the University of Toronto, and that he derives not one cent of royalty from his discovery. The funds derived are largely spent on research under the control of the discoverers.

NEED FOR REVISION IN MEDICAL POINT OF VIEW

Our new order of living in the machine age, the development of specialization in medical practice, the incorporation of great industries for the exploitation of discoveries made in the laboratories and similar factors emphasize the need for some revision in the medical point of view concerning medical patents. The control

of such patents by universities has to some extent assured standardization of products. Usually only reputable firms capable of developing and exploiting products honestly are granted licenses to participate in the manufacture and sale of products controlled by the universities, although there are glaring exceptions.

While it is obvious that the entire trend of the times is toward the holding and control of patents, both medical and nonmedical, by educational and research institutions in order to provide suitable administration of the discoveries for the benefit of the public, it is obvious also that there are some arguments opposed to the holding of patents by universities. One of the most cogent arguments now advanced concerns the relationship of the university or research institute to taxation. Endowed universities and research institutions as well as scientific organizations and trust funds in the interest of the public are usually exempt from taxation. They are nonprofit organizations. They owe a definite duty to the public, which bears the burden of taxation. Universities must consider the extent to which exploitation of patents for the benefit of the institution may not bring on them the new burden of taxation from which they are now exempt. The exploitation of patents by universities places them in direct competition with one another. For example, there are now many patents concerned with the development of vitamin D. Because of the financial interests involved, the results of current research are jealously guarded and probably all research is being delayed through failure of research workers to communicate with one another. Indeed, it is known that workers in the same university, because of the rewards involved, may develop a competitive spirit which is likely to destroy entirely the type of cooperation in science which is responsible for much of our current progress. Such competition, in fact, defeats the whole purpose of a university. This point of view was beautifully expressed by Mr. G. W. Gray in his article on "Science and Profits" in *Harper's Magazine* for April 1936, when he said:

Scientific research, as a recognized full-time occupation, is one of the youngest of the professions. It has come up out of the basements and garrets of the early experimenters, and has attained status among the most honored of the callings of man. Perhaps the laboratory is pressed with economic necessity—but is that warrant for changing its charter? Possibly it can support itself handsomely and independently—but can it survive the shiftings of bases and the readjustments of outlook which commercialization entails? One of its greatest glories is its intellectual integrity and independence—but can this reputation continue unscathed in the clash of competitive sales campaigns of patented commodities, infringement suits, and other contentions of the marketplace in which the financial interest of the research institution is on one side of the dispute?

Patents are not administered by laws but by men. Contracts are not made by universities but by men. The difficulties which have arisen thus far in the control of patents in the medical field would seem to be difficulties which might easily have been avoided with the development of a proper spirit by those who administered the patents and by those who wished to use them. The difficulties are apparent in the various suits for infringement which have been filed from time to time in the courts and in the stipulations laid down by those who control the patents in relationship to research by others who might wish to carry the work still further.

The patents in the medical field which have aroused the most debate and trouble at present are the scarlet

fever patents held by the Scarlet Fever Foundation, the copper-iron patent held by the University of Wisconsin and perhaps also the various patents concerned with the production of vitamin D and vitamin D products. The sun in the sky should be freely available to all who wish to use it. Yet it has been hinted that there are some concerned with patents on vitamin D who would even inhibit investigators from experimenting with the sun.

The history of medicine reports innumerable instances in which curious minded doctors have combined all sorts of elements into preparations of various sorts in the administration and in the control of disease. No doubt each of the elements such as copper and iron has on occasion been combined with one or more of the others merely with a view to seeing what would happen and sometimes these, or worse combinations, have been put into the human body. Thus it is doubtful that the combination of any two well known elements may be considered a new procedure. Yet the question is raised as to whether or not the specific combination of two elements for a single apparently new purpose discovered by investigators in a laboratory does or does not constitute a discovery.

No doubt investigators long before the time of Drs. George F. and Gladys Henry Dick conceived the idea that the streptococcus was an important factor in scarlet fever and that products derived from the streptococcus might be used in the diagnosis, prevention and treatment of scarlet fever. Conceding that the Drs. Dick proved a certain streptococcus to be the cause of scarlet fever and developed thereby a method of diagnosis and means of determining susceptibility and methods for the prevention and treatment of scarlet fever based on their discovery, how far should they be entitled, under the patent granted them, to control research or other work with such products by other investigators? This has been a main bone of contention and quarrel for some years. Perhaps this difficulty may be credited to the fact that the administration and control of the patent lie with the discoverers themselves rather than with some wholly disinterested body capable of viewing the matter objectively.

When our civilization was such as to safeguard the physician, considering him as one who gave freely of his knowledge and service to mankind and therefore entitled to special considerations, physicians might well offer freely their time, their service and their original contributions to all mankind. Our complex civilization of today places ever new burdens on this willing bearer of mankind's tribulations. In many occasions and under many governments, physicians are now made employees of the state with some emolument and much control. Why should such a physician give freely to every one the product of his brain when the state refuses longer to recognize his professional status or to consider him as a philanthropic worker? It might be suggested that the state take over and control all patents in the field of health, but be reminded that the state has manifested no particular wisdom thus far in the granting of patents in the medical field. A patent was granted to Elisha Perkins for his electric tractors, to Sanche for that preposterous gas pipe called the Oxydonor. Patents have been issued covering flavoring of epsom salt, for a necklace supposed to cure goiter, for a tapeworm trap, for a method whereby the hen herself would date her eggs, for a shock-absorber bed and for a combination of chemicals alleged to confer firm immunity to most diseases, including syphilis, tuberculosis, diphtheria and other infectious diseases.

It would require a far finer organization of the patent office than now prevails to insure the public protection against fraud and exploitation with medical discoveries.

The act of securing a patent is not in itself unethical. Mere publication of a discovery does not protect the discoverer against exploitation of his patent by others. The administration of the patents covering insulin, liver extracts and many others has been shown to be for the public good. Manufacture has been standardized. Products of quality are provided for the public and, because of the protection, the prices of such products have been steadily reduced from the time when they were first offered to the people. It is doubtful that a high quality standardized product at a minimum price could have been made available nearly so soon had these preparations been thrown into the open market. Moreover, there is no question but that inferior products in vast numbers would also have been offered for general use. Finally, under our patent system, unless the discoverer or the university controls the patent, some one not bound by any ethical considerations whatever may patent the product and the process and thus take it away from those responsible for its discovery and development. The committee of the American Association for the Advancement of Science has suggested the desirability of patents in the medical field in order to encourage manufacturers in the development of high quality products at low prices, to recoup investigators for funds spent in research, and for the devotion of excess funds to further research.

CONCLUSION

In 1933 I concluded an editorial on the subject of medical patents with the following paragraph: "Conceivably the best interest would be served if some central body might be developed, wholly altruistic in character, capable of administering medical patents for the benefit of the public, and assuring a reasonable remuneration to the investigator, the devotion of much of the profit to research, and adequate return to manufacturers willing to develop quantity production and distribution in an ethical manner. Such a central body might also set up requirements for adequate clinical research in connection with the development of new products so that a premature launching of unestablished products on the medical profession or on the public could be avoided."

With that suggestion I still concur. It has seemed to me that the American Medical Association with its prestige, its central organization and its available funds might well stimulate the development of a corporation, not for profit, for the administration of patents in the medical and health fields. To this corporation inventors might assign the patents taken out by them with the understanding that the corporation would administer the patents within the limitations suggested and that the expenses of administration with suitable royalties to investigators, universities, research institutions or other bodies might be derived from the income available through licensing of well established firms to manufacture products under the patents.

The confusion of plans in the various universities, the vicious and sometimes malicious criticism of discoverers and of universities, the legal difficulties in which the universities sometimes find themselves and the basic principle enunciated in the Principles of Medical Ethics all seem to point toward the necessity of some unbiased body to assume responsibility and control in this field.

535 North Dearborn Street

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

SUPRARENALIN (See New and Nonofficial Remedies, 1937, p. 223)

The following additional dosage form has been accepted:

Suprarenalin Solution 1:100 (For Oral Inhalation) Suprarenalin, 1 part in 100 parts of physiologic solution of sodium chloride containing 0.5 per cent chlorbutanol and not more than 0.1 per cent sodium bisulfide.

CEVITAMIC ACID (See New and Nonofficial Remedies, 1937, p. 456)

Cevitamic Acid-Lederle—A brand of cevitamic acid—N N R, obtained from the fermentation of certain sugars.

Manufactured by Lederle Laboratories Inc., Pearl River, N. Y. No U. S. patent or trademark.

Tablets Cevitamic Acid Lederle 0.01 Gm.

Tablets Cevitamic Acid Lederle 0.05 Gm.

POLLEN ANTIGENS—"National" (See New and Nonofficial Remedies, 1937, p. 39)

The following preparation is marketed in 5 and 15 cc. vial packages representing 25, 50, 100 and 250 units per cubic centimeter.

Mixed Grass Pollen Antigen National (Timothy 75 per cent, June Grass, Orchard Grass, Red Top, Rye, and Sweet Vernal Grass, each 5 per cent)

Manufactured by the National Drug Co., Philadelphia. No U. S. patent or trademark.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1937, p. 133)

Bismuth Subsalsicylate in Oil 2 grains per cc. A suspension containing 2 grains of Merck's bismuth subsalsicylate in 1 cc. oil of sesame.

Prepared by the National Biological Distributors Inc., Baltimore. No U. S. patent or trademark.

IPRAL SODIUM (See New and Nonofficial Remedies, 1937, p. 106)

The following dosage form has been accepted:

Elixir Ipral Sodium Contains ipral sodium 13.17 Gm. in 1,000 cc. in a menstruum composed of alcohol 22 per cent, glycerin, saccharin and water, flavored with a mixture of pineapple concentrate, orange syrup, fluidextract of kola, fluidextract of cascara, and tincture of cardamom compound. One teaspoonful (5 cc.) is equivalent to 1 grain of ipral sodium.

PROCAINE-ABBOTT See New and Nonofficial Remedies, 1937, p. 69)

The following dosage form has been accepted:

Ampoules Procaine Hydrochloride Solution 2% 100 cc. Each cubic centimeter contains procaine hydrochloride 0.02 Gm., sodium chloride 0.0044 Gm., sodium bisulfite 0.001 Gm., and distilled water to make 1 cc.

SULFANILAMIDE (See THE JOURNAL, July 31, 1937, p. 358, Supplement to New and Nonofficial Remedies, 1937, p. 17)

Sulfanilamide-Gane & Ingram—A brand of sulfanilamide—N N R.

Manufactured by Gane Chemical Works Inc. (Gane & Ingram Inc. distributors). No U. S. patent or trademark.

Sulfanilamide-Monsanto—A brand of sulfanilamide—N N R.

Manufactured by Monsanto Chemical Co., St. Louis. No U. S. patent or trademark.

Sulfanilamide—"National"—A brand of sulfanilamide—N N R.

Manufactured by the National Drug Co., Philadelphia. No U. S. patent or trademark.

Sulfanilamide Tablets 5 grains

Sulfanilamide-P. D. & Co.—A brand of sulfanilamide—N N R.

Manufactured by Parke, Davis & Co., Detroit. No U. S. patent or trademark.

Sulfanilamide Tablets 5 grains

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SATURDAY, NOVEMBER 6, 1937

DEATHS FOLLOWING ELIXIR OF SULFANILAMIDE-MASSENGILL III

Thirty-five years ago William Osler wrote

To modern pharmacy we owe much and to pharmaceutical methods we shall owe much more in the future, but the [medical] profession has no more insidious foe than the large borderland pharmaceutical houses. No longer an honored messmate, pharmacy in this form threatens to become a huge parasite, eating the vitals of the body medical. We all know only too well the bastard literature which floods the mail, every page of which illustrates the truth of the axiom: The greater the ignorance the greater the dogmatism. Much of it is advertisements of nostrums foisted on the profession by men who trade on the innocent credulity of the regular physician, quite as much as any quack preys on the gullible public. Even the most respectable houses are not free from this sin of arrogance and of ignorant dogmatism in their literature. A still more dangerous enemy to the mental virility of the general practitioner is the "drummer" of the drug house.¹

During the intervening years the work of the Council on Pharmacy and Chemistry has brought about vast improvement among leaders in the pharmaceutical field. Unfortunately many smaller and unenlightened groups of pharmacists and pharmaceutical manufacturers fail to recognize the importance of high standards in all the professions concerned with health. It is still possible for such manufacturers to place on the market semisecret preparations, untested as to either toxicity, potency or therapeutic value.

Sixty deaths are known to have resulted from the administration of the Elixir of Sulfanilamide distributed by Massengill. Under our present laws the responsibility for protection of the public rests on the Food and Drug Administration, which is as inefficiently armed as a hunter pursuing a tiger with a fly swatter. Under our present laws there is nothing to require the S. E. Massengill Company or any other firm to divulge the formula or to make adequate pharmacologic or clinical tests before placing a hazardous "patent medicine" or proprietary preparation on the

market. Ironically the label for Elixir of Sulfanilamide-Massengill carried the recommendation "continue at this dose until recovery."² In reply to a question by a physician who had lost a patient after having prescribed the mixture, a letter bearing the signature S. E. Massengill was sent:

"We have your letter of the 22nd instant and regret very deeply the fatal result that you had when administering the above product. We are sorry that we cannot give you any information as to why this should have happened. Many chemists are now working on the problem and so far no solution of a scientific nature has been made.

"We regret exceedingly this unfortunate occurrence but as we violated no law and made no error in our manufacture I do not think that we should be blamed by the unlooked for action of this product."

Thus speaks a firm which has done essentially nothing to contribute to the knowledge of medicine and which would capitalize on the discoveries of others, by exploiting a semisecret preparation.³ Who should have made certain of the safety of the preparation if not the purveyor? In the cycle comes first the manufacturer who launched the preparation without proper precaution, second, the detail man who importuned physicians to use the product, third, the pharmacist who was willing to sell across the counter, either on request from the public or on physicians' prescriptions, toxic preparations of secret character, yet whose training is vaunted as a protection to the public. But most serious perhaps after the manufacturer are those physicians who will not heed the warnings concerning the use of proprietary, unstandardized, semisecret remedies. This phase has been adequately discussed editorially in the two previous issues of THE JOURNAL.

Perhaps the physicians who used this product were misled by the term "Elixir." In general that term has connoted sweetened, aromatic, hydro-alcoholic liquids similar to cordials, to which active drugs are added. This definition, however, has undergone some changes in the practice of pharmacy by the employment of other solvents, such as glycerin. There is no legal definition of the term "Elixir." The U. S. Pharmacopoeia Revision Committee or some group with legal power should define "Elixir" and similar terms.

As has been cautioned repeatedly, sulfanilamide should not be used with other drugs except sodium bicarbonate. It decomposes in ordinary vehicles. In the case of the diethylene glycol vehicle devised by Massengill, the product did not decompose but the patients did die.

Elsewhere² in this issue of THE JOURNAL is an extended report on the chemical composition of the product, on the pharmacologic³ work following the administration of Elixir of Sulfanilamide-Massengill to animals, and on the studies of necropsy material from

¹ Excerpt from lecture Chauvinism in Medicine given before the Canadian Medical Association, Montreal, 1902 and from the book Acquaintances and Other Addresses by William Osler, Philadelphia: P. Blakiston's Son & Co. 1906, p. 300.

² This issue, p. 1531.

³ The reports of Dr. Geiling and Dr. Cannon are reprinted and optimized. Details and reports of observations on the action of sulfanilamide may be the subject of future contributions to the literature.

both animals and man. These studies have been under way day and night since the middle of October. The chemical analysis shows that the product contained approximately 72 per cent of diethylene glycol by volume. The pharmacologic investigations show that there is no essential difference in the results whether Elvir of Sulfanilamide-Massengill in the doses recommended or comparable doses of a "synthetic" mixture of diethylene glycol are administered. The pathologic examinations reveal that the picture of death is similar in human and animal necropsy material. The terminal symptom in all the instances recorded was anuria.

Sixty persons have been sacrificed simply because the toxicologic observations now reported were not determined in advance by a manufacturer who had no hesitancy in importuning physicians to use the elvir. Both chemical and medical literature contain references to the toxicity of diethylene glycol in the amounts recommended by the manufacturer. Diethylene glycol, administered in doses comparable to the dose recommended by the manufacturer of Elvir of Sulfanilamide-Massengill, acts as a cumulative poison. Surely there has been no blacker picture of the inadequacy of our present food and drug laws or the lack of common scientific decency in drug manufacture than that illustrated by this tragic disaster.

ANTIDIURETIC HORMONE OF THE POSTERIOR PITUITARY

In 1895 Oliver and Schafer first demonstrated the action of posterior pituitary extracts on the vascular system. Since then preparations have been made which are suitable for clinical use, but the hormone or hormones of the posterior pituitary have not been isolated in chemically pure form. Some of the problems of the posterior pituitary must await the identification in chemically pure form of the "mother" substance of Abel,¹ its fractional derivatives or separate fractions.² The physiologic investigations of this gland have already far outstripped chemical studies. It seems likely, therefore, that chemical purification will merely settle the controversy that has existed as to whether a single hormone is responsible for the diverse physiologic actions of the posterior pituitary or whether at least three or more active principles exist as such and are transported as separate entities in the blood stream.

Not the least striking of the properties of posterior lobe extracts is their antidiuretic activity. The site of this action has been the subject of considerable experimentation and debate. It is generally accepted that in man, at least, the effect of therapeutic doses of pituitary extract is due to an increased water reabsorption

in the renal tubule. The kidney appears, therefore, to be under the hormonal control of the pituitary gland with respect to reabsorption of fluid from tubular activity. However, conclusive evidence for the true hormonal nature of the antidiuretic principle has been lacking. When account is taken of the exactness with which the degree of body hydration is maintained, it seems likely that the relationship between the gland and the kidney must be a readily adjustable one and therefore probably under hormonal control. This assumption presupposes that the body requirements for water absorption in the kidney will to a large measure determine the degree of hypophysial activity in the production of the antidiuretic hormone. Convincing proof of this postulate has been recently presented by Gilman and Goodman,³ working in the laboratories of the Yale University School of Medicine.

The relative stability of pituitary extracts in urine suggested to these investigators that the antidiuretic hormone might be demonstrated in this body fluid whenever it was necessary for the organism to conserve water. Under such conditions the blood concentration of the hormone might rise to levels exceeding the renal threshold, thus permitting the substance to pass into the urine. They produced this physiologic need for the conservation of water in rats that were dehydrated by either water and food withdrawal or by oral administration of sodium chloride. Suitably concentrated and dialyzed urines from these animals showed, on bio-assay, marked antidiuretic activity. Control animals, given water ad libitum, showed no urinary excretion of the antidiuretic hormone. Experiments were also conducted on hypophysectomized animals. This group of animals, from seven to fourteen days after operation, was deprived of all water during the period of urine collection and normal control animals were dehydrated at the same time under identical experimental conditions. The volume of urine from the hypophysectomized group of rats was approximately three times greater than that from the controls. It is evident, therefore, that the experimental animals were more dehydrated than the control group and had a greater stimulus for water conservation. Despite this need, however, assay demonstrated that the urine of the hypophysectomized rats contained no antidiuretic substance, while the control urine exhibited unmistakable antidiuretic activity. Thus it would appear that the pituitary gland is definitely the source of the antidiuretic substance in the urine. Further proof of the hypophysial origin of the antidiuretic principle of the urine was obtained by the demonstration of a similarity between the chemical properties of pharmacologic preparations from the gland and the urinary principle. The results offer definite evidence for the hormonal role of the antidiuretic principle.

¹ Abel J. J. *J. Pharmacol. & Exper. Therap.* **40**: 139 (Oct.) 1930.
² Kamm O. and others. *J. Am. Chem. Soc.* **50**: 573, 1928.

³ Gilman Alfred and Goodman Louis. *J. Physiol.* **90**: 113 (July) 1937.

FOOD AND DRUGS LEGISLATION

The unnecessary deaths of more than sixty people who took a pharmaceutical preparation labeled "elixir of sulfanilamide," secret in composition and unstandardized, emphasizes again the importance of securing as soon as possible adequate legislation relating to foods, drugs, diagnostic and therapeutic devices and cosmetics. Either by amendment of present food and drugs laws or by the passage of new laws the public must be protected. The Food and Drugs Act of 1906, as pointed out in the special article on this subject by our Bureau of Legal Medicine and Legislation, published elsewhere in this issue, fails in various ways to protect the consumer. It does not provide adequate standards of purity, potency, wholesomeness and labeling of foods and drugs, nor does it provide for suitable penalties when foods and drugs fail to meet such standards as it does establish. It provides no standards for diagnostic and therapeutic devices or for cosmetics. Moreover, the many loopholes in this legislation make evasion easy for those who wish to evade. Finally, that legislation was passed at a time when modern advertising was in its infancy, it provides no potent weapon against false or fraudulent advertising of foods, drugs, devices or cosmetics.

The proposed legislation, introduced into Congress beginning with the Tugwell-Copeland bill of the Seventy-Third Congress and passing through various phases in the Seventy-Fourth and the Seventy-Fifth Congress, is not adequate. From a legal point of view it seems weak in many particulars. One of the greatest weaknesses is the failure to set up adequate legal standards for drugs and diagnostic and therapeutic devices or to establish machinery by which such standards can be established. Had there been such standards, with adequate penalties for violation, the elixir of sulfanilamide tragedies would probably never have occurred. Indeed, as was emphasized in our editorial last week, present legislation is so inefficient that the Food and Drug Administration had to act by a special technical interpretation of the present law.

The Wheeler-Lea bill proposes to vest in the Federal Trade Commission supervision and control over the advertising of foods, drugs, diagnostic and therapeutic devices and cosmetics, leaving to the Food and Drug Administration supervision and control over their adulteration and misbranding. Under such an arrangement there will be not only duplication of effort but also conflict of interest from which the chief sufferer will unquestionably be the public, which is in need of protection. Division of authority and responsibility for the enforcement of food, drug and cosmetic legislation is dangerous. If the Wheeler-Lea bill is to be passed, certainly it should be amended to prevent such division of responsibility between the Federal Trade Commission and the Food and Drug Administration of the Department of Agriculture as would inevitably arise under the bill as now written.

The Copeland bill now pending before the Committee on Interstate and Foreign Commerce of the House of Representatives is a much better planned bill as far as effective protection of the consumer is concerned. The advertising provision and those relating to standards in the Copeland bill may well be strengthened. It is impossible to pass the Copeland bill, and if the desires of the Administration and of the Congress are for passage of the Wheeler-Lea bill, Congress should well consider the advisability of placing all the responsibility on the Federal Trade Commission rather than dividing it. In such action, however, it should bear in mind that the Food and Drug Administration has had many years of actual experience in enforcing food and drugs legislation. Most important, however, is adequate provision for establishment of obligatory legal standards for drugs and other materials used in the human body. Until such standards are created and until the penalties for violation are made sufficiently severe, there will be possible disasters such as the deaths from elixir of sulfanilamide, which for more than a fortnight might have continued to shock the nation.

Current Comment

CANADA CLEANS UP THE RADIO

The Canadian Broadcasting Corporation has promulgated regulations, effective November 1, designed to improve the standard of broadcasting. Among them are some regulations that should react to the betterment of the public health. Hereafter an article marketed under the Proprietary or Patent Medicine Act or the Food and Drugs Act may not be broadcast until it has been approved by the Department of National Health. The formula for any article bearing a distinctive or trade name distinguishing it from any other product, and marketed under the Food and Drugs Act, shall be submitted with each pertinent continuity at least two weeks in advance of the time at which the continuity is to be broadcast. No continuity recommending any treatment for any ailment shall be broadcast until it has been approved by the Department of National Health. No station shall "pick up" and rebroadcast any program unless permission in writing has first been obtained from the Canadian Broadcasting Corporation. Hereafter, no one shall broadcast advertising matter that contains false or deceptive statements. No one shall broadcast on the subject of birth control or on the subject of venereal disease or other subjects relating to public health unless such subjects are presented in a manner and at a time approved by the general manager as appropriate to the medium of broadcasting. No one shall broadcast programs presenting a person who claims supernatural or psychic powers, or fortune teller, character analyst, crystal gazer or the like. No program shall be broadcast in which a person purports to answer or solve problems submitted by the public unless such programs first shall have been approved.

writing by a representative of the Canadian Broadcasting Corporation. No one shall broadcast over the Canadian radio facilities the actual proceedings of any trial in a Canadian court or any abusive comment on any race, religion or creed. No one shall broadcast any advertising matter containing false or deceptive statements, and the advertising content of any program shall not exceed 10 per cent of the time of any program period. No one shall advertise spirituous liquors in any broadcast program. So-called spot announcements shall be limited to two minutes for each broadcasting hour and shall not be broadcast between 7 30 p m and 11 p m nor on Sundays at any time. No broadcasting station in Canada shall continue to be a part of a chain or network originating outside of Canada unless permission in writing is first obtained from the Canadian Broadcasting Corporation, also unless such permission is granted, no chain or network of two or more stations shall continue to be operated within Canada, and no station shall continue to be an outlet for any station, chain or network outside of Canada. There are many other new Canadian broadcasting regulations which, however, do not so directly affect the public health. Thus we shall receive from our northern neighbor radio broadcasts of purity in contradistinction to the quackery, fortune teller and "patent medicine" promotion that comes floating like a foul effluvium across the Rio Grande. The new Canadian broadcasting regulations may also serve as a suggestion much needed by our own broadcasting chains.

PASSIVE IMMUNITY IN MALARIA

Although it has been generally accepted that some immunity exists on recovery from malarial infections, reports in the literature on the protective property of serum taken from patients or animals with chronic malaria have been conflicting. Recently, however, Coggeshall and Kumm¹ reported a series of experiments on monkeys, employing two different types of parasites, which appear to demonstrate this phenomenon conclusively. The two strains used were *Plasmodium knowlesi* and *Plasmodium inui*. Macacus rhesus monkeys were used exclusively in the experiments and were infected by intravenous injection of citrated blood containing a known number of parasites.

Thirty-two animals were used in the observations in eight groups of experiments devised to test various aspects of passive immunity. The results seem to indicate that while the immune serum obtained from monkeys with chronic malarial infections definitely afforded good protection in some animals into which it was injected, it completely failed in others. These authors offer no adequate explanation for this circumstance but suggest that in addition to individual variation in the susceptibility of the monkeys there may be considerable variability in the concentration of the immune substances of the serum of the individual monkeys harboring a chronic infection from which the pooled serum was obtained. They concluded that when

Plasmodium knowlesi infection, which is almost invariably fatal in rhesus monkeys, can be made chronic by the early administration of antimalarial drugs, the animals then will harbor chronic infection for an indefinite period. The serum from such monkeys when injected into others with an acute attack has been found to have a definite inhibiting effect on the course of the experimental disease. These data indicate that protective antibodies are produced in the serum of monkeys during experimental malarial infection and can be demonstrated by animal protection experiments. The clinical applications, if any, however, cannot be ascertained as yet.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

Hospital News—A new \$48,000 hospital has been opened in Yuma County, with facilities for seventy-nine patients.

Society News—Dr Leslie M Smith, El Paso, Texas, addressed the Cochise County Medical Society, Bisbee, recently on "Fungus Infections of the Southwest."

COLORADO

Personal—A portrait of the late Dr Samuel D Gross, Philadelphia, was recently presented to the library of the Medical Society of the City and County of Denver by Dr William M Bane. The portrait is done in charcoal and is the work of Dr Bane's father, the late Dr William C Bane, for many years a member of the faculty of the Denver and Gross Medical College.

DELAWARE

State Medical Election—Dr Clarence J Prickett, Smyrna, was chosen president elect of the Medical Society of Delaware at the recent annual meeting. Dr Charles P White, Wilmington, is president for the coming year. Dr Allan V Gililand, Smyrna, has been elected secretary, succeeding Dr William H Speer, Wilmington. The new officers will take office January 1. The next annual meeting will be held in Dover, Oct 10-12, 1938.

Society News—Dr Thomas Grier Miller, Philadelphia, addressed the New Castle County Medical Society, October 19, in Wilmington, on "Indigestion." Dr Hugh H Young, Baltimore, addressed the society, September 21, on "Diseases of the Prostate Gland."—Dr Lewis Kraefer Ferguson, Philadelphia, discussed "Practical Points in Treatment of Surgical Lesions in Ambulatory Patients," November 1, before the Delaware Academy of Medicine, Wilmington.

FLORIDA

Personal—Dr William M Weems, formerly of Clopton, Ala, has been appointed health officer of Palm Beach County.—Dr Alvin L Stebbins, Punta Gorda, has been appointed health officer of Manatee County.

First Annual District Meeting—The first annual meeting of the Southwest Medical District of the Florida Medical Association will be held at the City Hall, Plant City, November 11. Dr George L Cook, Tampa, president, Hillsborough County Medical Society, will deliver the address of welcome. Other speakers will be:

Dr Douglas D Martin, Tampa, Appendicitis in Children.
Dr Shaler A Richardson, Jacksonville, Quinine Amblyopia.
Dr Herman W Watson, Lakeland, Disturbances of the Thyroid Function.

GEORGIA

Personal—Dr Thomas W Collier, formerly of Albany, has been appointed health commissioner of a joint health unit for Toombs and Montgomery counties, his headquarters will be in Lyons.

¹ Coggeshall L T and Kumm H W. Demonstration of Passive Immunity in Experimental Monkey Malaria. *J Exper Med* 66:177 (Aug) 1937.

IDAHO

Personal—Dr James O Cromwell, Gooding, has been appointed in charge of the state mental hospital at Blackfoot. Dr Luther C Thompson, formerly with the Civilian Conservation Corps, will succeed Dr Cromwell in Gooding, according to *Northwest Medicine*.

ILLINOIS

Survey of Medical Services of Prisons—The report on a survey of medical services in the penal institutions of Illinois made by a special committee under the auspices of the Institute of Medicine of Chicago has been published. The report is concerned primarily with determining requirements for a modern medical program as adapted to the institutions studied. The medical services of the federal penitentiary system were used as a basis of comparison. Since 1930, when the federal system for this care was reorganized, these services have been under the supervision of the U S Public Health Service. Prior to the reorganization, the medical services, including the setting of standards, were left to the local administration of each prison. In its study the committee compared the medical personnel and the quantity of medical service rendered to the male inmates of federal prisons and those in the Illinois state prisons. For comparable average populations of about 10,000 in each case, the federal system has a total of forty-nine physicians, including twenty-four resident full time and twenty-five nonresident, part time, in attendance. Illinois has five resident full time physicians, including three psychiatrists, and eight nonresident part time physicians, a total of thirteen, exclusive of the services of two interns during the summer. The federal system reports 174,812 days of hospital care and 421,128 visits of ambulatory patients to the medical services, while Illinois reports 54,004 days of hospital care and 143,994 visits of ambulatory patients. The report states that these figures "reflect the difference between the services the institutions are called upon to perform when the initiative is left largely to the individual prisoner, as is the case in Illinois, and when the medical service itself takes the initiative in finding and following up conditions which may be benefited by treatment, as is the case in the federal system." The study reveals that the states' medical services are being carried on as they were in the federal institutions previous to 1930 and concludes "that the medical services display a type of organization, or lack of organization, suitable to a generation or more ago, when these services were presumably instituted. While they function as well as may be expected under these conditions, they fall far short of the requirements for the modern, aggressive health service now regarded as essential for large populations under similar conditions."

Chief among the committee's recommendations is the reorganization of the general medical and surgical services on a state-wide basis, under the supervision of a physician to be attached to the department of public welfare, with responsibility for the setting of standards and for the selection of medical personnel. The committee also recommends installation of a graded personnel, making the service attractive as a medical career and a considerable increase in the total medical personnel. Specific recommendations are made for the control and treatment of tuberculosis and venereal disease, and a plan is proposed for improving the quality of major surgery. The committee points out that Illinois has been a pioneer in the organization of a modern psychiatric service and recommends no change in this service, although it urges an increase in personnel. It estimates that all of its recommendations can be carried out at an added cost of not to exceed three cents a day for each individual in the prison population. The salary schedule for 1936 for the general medical and surgical services totaled \$17,880, while the proposed increase in a reorganized service calls for an additional \$44,000. The committee estimates that the ultimate cost of a complete and comprehensive reorganization should not exceed \$100,000 annually. The institutions studied were those at Joliet, Menard, Pontiac, Vandalia and Dwight. Members of the committee, which was appointed Nov. 13, 1935, comprised Drs Franz G Alexander, Clarence F G Brown, Walter M Brunet, Francis J Gerty, Jerome R Head, Don C Sutton, Franklin C McLean, Chicago, chairman, and Frank L Rector, Evanston.

Chicago

Changes in the Faculty at Loyola—Recent changes on the faculty at Loyola University School of Medicine include the appointment of Dr William R Cubbins as professor and director of a new division of bone and joint surgery, Julius Sendrov, Jr, Ph.D., as professor and head of a new department of experimental medicine and the appointment of

Dr Henry Schmutz, head of the department of gynecology, as head of the department of obstetrics to succeed Dr Bertha Van Hoosen, who becomes professor emerita. Other changes include

Dr Thomas F Finegan, professor of urology
Dr Robert E Cummings, assistant clinical professor in pediatrics.
Dr H William Elghammer, clinical professor of pediatrics
Dr William J Pickett, associate clinical professor of surgery

Society News—The Chicago Gynecological Society was addressed, October 22, by Drs Franklin E Hall on "Inversion Uteri" and James E Fitzgerald on "Hyperemesis Gravidarum."—The Chicago Ophthalmological Society was addressed October 25, by Drs William F Moncreiff on "Contact Lenses: A New Technique for Making Impressions of the Anterior Segment", James W White, New York, "The Occurrence of Divergence Excess Associated with Vertical Anomalies," and Theodore L Terry, Boston, "Concerning the Pathology of Glaucoma."—At a meeting of the Chicago branch of the American Chemical Society, September 2, Dr Leon Unger and Marjorie Moore, Ph.D., discussed "Cooperative Studies on Hay Fever and Other Allergic Conditions."—The Chicago Society of Internal Medicine will be addressed November 22, among others, by Dr Harold C Lueth and Thrift G Hanks on "Some Unusual Reactions to Nitroglycerin in Patients with Hypertension."—Dr Walter E Dandy, adjunct professor of neurologic surgery, Johns Hopkins University School of Medicine, Baltimore, addressed the Englewood branch of the Chicago Medical Society, November 2, on "Diagnosis and Treatment of Lesions of the Cranial Nerves." The Irving Park branch was addressed November 2 by Drs Archibald L Hoyne on "The Later Stages of Poliomyelitis: Treatment and Prognosis," and Fremont A Chandler, "Orthopedic Management." Poliomyelitis was also discussed at the meeting of the South Chicago branch October 26, the speakers were Drs Sidney O Levinson and H William Elghammer.

IOWA

Another County Health Unit Organized—The Polk County Health Unit was organized August 18. The new unit will not function in or serve the city of Des Moines but the personnel of the unit will cooperate with the city's health commissioner, Dr Harry E Ransom, in borderline public health conditions affecting both city and county. The state will maintain the department. Dr Thomas E Eyres is health officer of the new unit with headquarters in the City Hall at Des Moines.

Health Lectures for High School Students—The second annual course in public health for all high school students in Crawford County, under the auspices of the Crawford County Medical Society, began September 20. Lectures arranged by the association will be given periodically in nine schools during the school year. The course is planned as an annual project so that after the first four years graduating students will have had thirty-six hours of public health lectures. The program this year is as follows:

Dr Ralph E Haskell, Denison, Infection Resulting from Injuries
Dr Simon A Huber, Charter Oak, Diseases and Care of the Ear, Nose and Throat
Dr Eugene J Maitre, Vail, Venereal Diseases
Dr Edward M Mark, Manilla, Diseases and Care of the Skin
Dr Frank N Rowe, Denison, Diseases, Defects and Care of the Eyes
Dr Claudius L Stevens, Denison, The Care of the Heart
Dr Thomas L Vineyard, Dow City, Tuberculosis in High School Age
Dr Dora E Kjelhorn, Zarske, Charter Oak, Infectious Diseases of the Respiratory Tract Other Than Tuberculosis
Dr John James Duffy, Denison, Epidemic Infections of the Central Nervous System (Infantile Paralysis and Spinal Meningitis)

KANSAS

Society News—Dr Lester R Dragstedt, Chicago, discussed "The Etiology of Gastric and Duodenal Ulcer" before the Kansas City Academy of Medicine, October 15.—Dr Karl A Menninger and Norman Reider, Topeka, addressed a joint meeting of the Marion, McPherson and Harvey county medical societies at Marion, October 27; their subjects were "The Psychoneurotic and the General Practitioner" and "Headaches," respectively.—Dr Ernest E Tippin, Wichita, addressed the Marion County Medical Society, September 29, on "Physiology of the Nose."

KENTUCKY

Personal—Dr Henry G Wells, Richmond, has resigned as health officer of Madison County.—Dr William A Krieger, Newport, has been appointed city health officer to succeed Dr John Todd.

Society News—A symposium on traumatic surgery was presented before the Jefferson County Medical Society at Louisville, October 18, by Drs Ira N Kerns, Robert O Jones,

James Allen Kirk and Herman Mahaffey. Dr Joshua B Lukins also made an address on malpractice—Drs William Austin Bloch and Max L Garon, Louisville, addressed the Grant County Medical Society, Williamstown, September 22, on "Deficiencies of the Thyroid." Dr R Hayes Davis, Louisville, spoke at a recent meeting on "Functional Diseases"—Dr Lucius E Smith, Louisville, addressed the Letcher County Medical Society, Jenkins, September 21, on tuberculosis

LOUISIANA

Personal—Dr James W Tedder has been appointed assistant professor of dermatology at the Louisiana University Medical Center—Dr Herbert N Barnett, New Orleans, has been appointed acting health director of Bossier Parish, succeeding Dr Murphy M Sims, Benton, who resigned to enter private practice in Waskom, Texas

Society News—At the meeting of the Orleans Parish Medical Society, October 11, the speakers included Drs William H Perkins, professor of preventive medicine Tulane University of Louisiana School of Medicine, New Orleans, on "Relation of Preventive Medicine to the Federal and State Welfare Program," and Elizabeth Wisner, Ph D, dean, school of social work at Tulane, "Some Phases of the Social Security Act"—At a meeting of the Tri-Parish Medical Society in Lake Providence, September 7, Drs John H Burge, Lake Village, Ark, discussed "Infections of the Hands and Feet," and Smith W Douglas, Eudora, Ark, "Medical Fads and Fallacies"

MARYLAND

Fund for Educational Purposes—A foundation endowed with \$500,000 will be created for charitable, educational or research purposes, under the will of the late Louis Blaustein, Baltimore. It will be known as the Louis and Henrietta Blaustein Foundation. The income from the fund may be used or its principal, it may go for medical or sociological research, education, recreation or any other benevolent purpose, it may be spent in Baltimore or elsewhere

MASSACHUSETTS

Society News—Dr Soma Weiss, associate professor of medicine, Harvard University Medical School, Boston, addressed the opening meeting of the South End Medical Club, October 19, on "Syncope, Collapse and Shock."—At a meeting of the Norfolk District Medical Society in Boston, October 26, Dr William Dameshek, Boston, discussed "Leukemia and Related Disorders."—Dr George S Sprague White Plains, N Y, discussed "The Rationale of Psychiatric Therapy" before the New England Society of Psychiatry in Westborough, October 19.—At a meeting of the New England Heart Association and the Suffolk District Medical Society, October 25, Dr Milton C Winternitz, New Haven, Conn, spoke on "Pathology of Vascular Diseases"—The Boston Society of Psychiatry and Neurology was addressed, October 21, by Drs Leon J Robinson, Palmer, on "Syncope, Convulsions and the Unconscious State Their Relationship to the Hyperactive Carotid Sinus Reflex Among 1,000 Patients in an Institution for Epilepsy," and Calvert Stein, "Practical Aspects of Child Guidance—A Critical Analysis of 500 Cases from the Springfield Hospital Child Guidance Clinic"—At a meeting of the Harvard Medical Society in the Peter Bent Brigham Hospital, Boston, October 26, Drs William G Lennox and Frederic A Gibbs discussed "Epilepsy in the Light of Recent Brain Wave Studies"

Control of Hazardous Dusts and Fumes—The following committee has been appointed to assist the state department of labor and industries in the preparation of rules and regulations for the control of hazardous dusts and fumes in the manufacturing establishments of the state

Dr Joseph C Aub of the Collis P Huntington Memorial Hospital
E H Ballard general foundry superintendent General Electric Company
John Daniels legislative agent Associated Industries of Massachusetts
Philip Drinker CE professor of industrial hygiene Harvard School of Public Health
Laurence Foley international president Granite Cutters International Association of America
Dr Francis T Hunter of the Massachusetts General Hospital
William M Kand president Merrimac Chemical Company
Robert J Witt secretary treasurer Massachusetts Federation of Labor
Stephen E Whiting chief engineer Liberty Mutual Insurance Company

According to Manfred Bowditch, director division of occupational hygiene the committee is studying the establishment of maximum allowable concentrations of industrial fumes. As

a basis for the determinations it is using a tabulation in which all standards known thus far to have been promulgated are combined with tentative figures proposed by the division of occupational hygiene and in addition it has obtained the criticisms of twenty-two authorities in this country and abroad to whom these figures were submitted

MICHIGAN

State Medical Election—Dr Henry A Luce, Detroit, was chosen president-elect of the Michigan State Medical Society at its annual meeting in Grand Rapids, September 27-30, and Dr Henry Cook, Flint, was installed as president. The seventy-third annual meeting of the society will be held in Detroit Sept 19-22, 1938

Society News—Dr Carey P McCord, Detroit, addressed the Kent County Medical Society in Grand Rapids, October 13, on occupational diseases—The West Side Medical Society, Detroit, was addressed, October 7, among others, by Drs Ernest H Watson on "Current Status of Sulfanilamide Therapy," and John H Cobane, "Treatment of Seborrhoeic Dermatitis and Epidermophytosis"—Dr Frederic Schreiber, Detroit, discussed "Cerebral Anoxemia" before the Wayne County Medical Society, Detroit, October 18—Dr Charles Leslie Mitchell, Detroit, discussed "Back Pain" before the Washtenaw County Medical Society in Ann Arbor, October 12—Dr Louis H Newburgh, Ann Arbor, addressed the Kalamazoo Academy of Medicine, October 19, on "Nature and Management of Nephritic Edema"

Personal—Dr John C Bugher, assistant professor of pathology, University of Michigan Medical School, Ann Arbor, has resigned to join the staff of the Rockefeller Institute for Medical Research, New York. He will be engaged in research at the institute until January, when he will sail for Bogota, Colombia, to study yellow fever—Dr George A Kamperman, formerly professor of gynecology, Wayne University College of Medicine, Detroit, was awarded the honorary degree of master of science at the opening exercises of the eighty-eighth session of the University of Michigan Medical School. The Sternberg Medal, awarded annually to the student with the best record in preventive medicine, was presented to Dr Carl A Moyer, an intern in the department of surgery.—Dr Martin A Mortensen, Battle Creek, was guest of honor at a farewell dinner, October 5, given by the Calhoun County Medical Society. He is leaving Battle Creek to live in California. Dr Stanley Gibson, associate professor of pediatrics, Northwestern University Medical School, Chicago, addressed the meeting on "Diagnosis and Abdominal Conditions in Children"—Dr Edwin H Place, Burlington, Iowa, has been appointed health officer for Midland County, succeeding Dr Leslie V Burkett, Midland, who has accepted a similar position in Genesee County

MISSISSIPPI

Community Hospital Opened in Tupelo—The North Mississippi Community Hospital was opened at Tupelo October 3. This fifty-bed hospital is the eighth built as part of a special project of the Commonwealth Fund of New York, which is now undertaking to provide one new hospital each year for a predominantly rural community which will agree to meet its share of costs and to run the institution in accordance with generally accepted standards. The ninth hospital is now under construction at Ada, Okla, and the tenth has been awarded to the community centering in Provo, Utah. The fund began this project in 1926 as an experiment in meeting the need of rural communities for better medical and other health services. The present plan is to aid in establishing hospitals of between twenty-five and fifty beds, easily accessible to a rural community having a population large enough to make good use of such accommodations and capable of meeting operating costs. The hospital may either be a totally new institution or may replace existing facilities which are clearly inadequate. The fund furnishes plans, specifications and architectural supervision for the construction and not less than \$200,000 as a contribution toward capital costs. Communities needing a fifty bed hospital are required to raise from \$40,000 to \$60,000 for their share of the capital cost and must provide in addition a site (with service connections) and from \$10,000 to \$15,000 to meet the deficit of the first year's operation. Ownership and administrative responsibility are lodged in a local corporation, organized not for profit which contracts with the fund to operate the hospital in agreement with specified standards. Hospitals founded under this program are now

operating in Murfreesboro, Tenn., Farmville, Va., Glasgow, Ky., Farmington, Maine, Wauseon, Ohio, Beloit, Kan., and Kingsport, Tenn.

MISSOURI

Society News—Dr Karl A Menninger, Topeka, addressed the Jasper County Medical Society in Joplin, October 12, on "The Emotional Factors of Hypertension"—A clinic on arthritis was presented before the St. Louis Medical Society, October 26, by Drs Ralph A Kinsella, James Archer O'Reilly and Raymond O Muether.

NEW JERSEY

Cancer Week in Passaic County—During the week of October 11 the Passaic County Medical Society sponsored a "Cancer Week" in Paterson. Two evening symposiums for the medical profession were presented: one on cancer of the stomach by Drs Fred W Stewart, George T Pack and Ralph E Herendeen, New York, the other on cancer of the colon by Drs Paul Klemperer, New York, and Frank H Lahey, Boston. Dr Frank E Adair, New York, lectured to the public one evening. Round table discussions were held each afternoon, led by Drs Louis G Shapiro, Norman M Dingman and William Spickers. There were also exhibits both for the physicians and for the public, including motion pictures.

Society News—At a meeting of the Essex County Medical Society, Newark, October 14, the speakers were Dr Chester R Brown, Kearney, on "Child Welfare", Dr Richard H Dieffenbach, "Empyema," and Clara H Krauter, principal of the Essex County Girls' Vocational School, "Training for Nursing Attendants"—Drs David M Davis, Philadelphia, and Joseph C Lovitt, Camden, addressed the Camden County Medical Society, October 5, on "Anterior Poliomyelitis with Special Reference to Early Diagnosis" and "Visual Examination of the Urine as a Guide to Urologic Diagnosis" respectively—Dr Arthur M Master, New York, addressed the Hudson County Medical Society, Jersey City, October 5, on "Prognostic Factors in Coronary Thrombosis"—Drs Henry H Kessler, Newark, and Charles Murray Gratz, New York, addressed the Bergen County Medical Society, Hackensack, October 12, on "Cineplastic Surgery" and "Facial Adhesions as a Cause of Pain" respectively—Dr Joseph Stokes Jr, Philadelphia, addressed the Burlington County Medical Society, Moorestown, September 9, on "Newer Knowledge Concerning Influenza"—Dr Norman H Jolliffe, New York, addressed the Passaic County Medical Society, Paterson, September 9, on "The Clinical Importance of Avitaminosis."

NEW YORK

Society News—Dr Stanley P Reimann, Philadelphia, addressed the Ulster County Medical Society, Kingston, October 21, on "Secondary Lesions of the Breast"—Dr Julius H Hess, Chicago, addressed the Onondaga Medical Society, Syracuse, October 28, on "Early Care of Premature Infants and Their Later Physical and Mental Development"—Dr Werner J Rose, Buffalo, addressed the Chautauqua County Medical Society, Cassadaga, September 15, on "Conditions Above and Below the Diaphragm that Simulate Heart Disease"—Dr Clarence J H Durshordwe, Buffalo, and Amos G Stiker, DDS, Addison, addressed the Steuben County Medical Society in Hornell, September 9, on "New Uses of Oxygen" and "Surgery for Immediate Dentures" respectively.

First Pneumonia Institute—The first of five pneumonia institutes sponsored by the state department of health and the Medical Society of the State of New York was held in Syracuse, October 12, with an attendance of fifty for the full program and about forty who attended the lectures but could not be admitted to the clinics and demonstrations for lack of space. The morning session was given over to lectures on the following subjects: "Early Clinical Diagnosis of Pneumonia," "Bacteriologic Diagnosis of Pneumonia," "Oxygen Therapy" and "Serum Therapy of Pneumococcus Pneumonia." The speakers were Drs Edward C Reifenshein Sr, Oliver W H Mitchell and Orren D Chapman, Syracuse; David D Rutstein, Albany, and Jesse G M Bullowa, New York. There were clinical demonstrations of these points, followed by a clinic on treatment showing results of serum therapy. The general sessions were held at the Syracuse Memorial Hospital and the demonstrations at both the hospital and the Syracuse University School of Medicine. It is planned that another institute will be held in Syracuse for physicians who could not be accommodated at the first one. Other institutes will be held in Rochester, Buffalo, Albany and New York City.

New York City

Hospital News—Dr Russell M Wilder, Rochester, Minn., gave a lecture October 19 at Mount Sinai Hospital on "Treatment of Addison's Disease with Salts of Sodium and a Restricted Intake of Potassium"—Dr Leo M Davidoff has been appointed director of surgery at the Jewish Hospital in Brooklyn.

New Beth David Hospital Dedicated—A new million dollar building for Beth David Hospital at 161 East Ninetyth Street was dedicated October 17. The new building, which has ten stories and will accommodate about 200 patients, was opened for patients October 27. Mr Samuel G Ascher, superintendent for the past four years, has been made executive director. The hospital was formerly at Lexington Avenue and One Hundred and Thirteenth Street.

Diseases Under Investigation at Rockefeller Institute—The Hospital of the Rockefeller Institute for Medical Research announces that certain diseases are now under investigation and suitable patients may be referred by physicians and others interested. No charges are made for treatment, room, board or other services. Physicians should communicate by telephone or personal application before sending patients. The diseases are as follows:

Diseases of the blood: Aplastic idiopathic pernicious or severe megalocytic anemia; sprue or severe glossitis and stomatitis without anemia. Nephritis: Nephritis in initial acute stages and nephrosis in children especially desired.

Heart disease: Advanced heart failure in all age groups but especially in older patients.

Rheumatic fever: Any early acute form also acute sore throat, hemolytic streptococcus infections in rheumatic patients.

Chickenpox and measles: Measles in preeruptive stage, chickenpox, encephalitis following infectious diseases.

Acute lobar pneumonia and bronchopneumonia in adults.

Society News—Drs Paul C Swenson and Ross Golden addressed the New York Roentgen Society, October 18, on "Neoplasms" and "Infections and Deficiency States" respectively—Speakers at a meeting of the New York Pathological Society October 28 were Drs Andrea Saccone and Abraham Rosenthal, on "Colostrum Cell Sarcoma of the Breast", Richard Lewisohn, "Effect of Subcutaneous Injections of Concentrated Spleen Extracts on Mouse Sarcoma 180" and Paul Klemperer, "Chronic Intrahepatic Obliterating Cholangitis"—The first lecture to the public in the third annual series of the New York Academy of Medicine was delivered October 28 by Dr Francis R Packard, Philadelphia, entitled "From Barber-Surgeons to Surgeons"—Dr George G Orstein delivered a Friday afternoon lecture before the Medical Society of the County of Queens, October 15, on "Pathogenesis of Pulmonary Tuberculosis, Its Importance in Diagnosis and Therapy"—The section on laryngology, rhinology and otology of the Medical Society of the County of Kings will present a special program on "Problems of the Hard of Hearing," November 10, with addresses presenting the practical, educational and legislative points of view. There will also be exhibits and demonstrations of instruments and lip reading.

OHIO

Personal—Dr Arthur W Thomas, Ashtabula, has been appointed chief of the bureau of child hygiene and maternal welfare, state department of health, to succeed Dr Abram L. Van Horn, who resigned several months ago. Dr Thomas graduated from Ohio State University College of Medicine in 1914—Dr Carl J Wiggers, Cleveland, has returned from a tour of the Orient, where he delivered a series of lectures at Canton, Hong Kong, Shanghai, Peking, Seoul, Kyoto and Tokyo—Dr Claude S Beck, Cleveland, received the honorary degree of doctor of science from Franklin and Marshall College, Lancaster, Pa., October 3.

Society News—Clarence Cook Little, ScD, Bar Harbor, Maine, addressed the Academy of Medicine of Cincinnati October 12, on "Recent Advances in Biological Research on Cancer"—Dr Charles G Johnston, Detroit, addressed the Academy of Medicine of Toledo and Lucas County, Toledo, October 1, on "Treatment of Intestinal Obstruction by Means of the Sigmoid Tube"—At a meeting of the Summit County Medical Society, Akron, October 5, Dr Marion A Blankenhorn, Cincinnati, made an address on "Modern Treatment of Pneumonia"—At the first fall meeting of the Montgomery County Medical Society, Dayton, October 1, the speakers were the following: all of Cleveland, Drs Walter J Zeiter, on "Clinical Applications of the Newer Developments in Physical Therapy," Everett N Collins, "Diseases of the Colon and Rectum," and Jones, "Surgical Treatment of Diseases of the Colon."

OKLAHOMA

Special Meeting of Delegates—A special meeting of the house of delegates of the Oklahoma State Medical Association was held in Oklahoma City November 3 to consider pending medical legislation

Society News—Drs Evans E Talley and Alfred J Metscher, Enid, addressed the Garfield County Medical Society, Enid, September 30, on "Diseases of the Thyroid Gland" and 'Management of Cross Eyes' respectively—Drs C J Fishman and Jess D Herrmann, Oklahoma City, addressed the Okmulgee County Medical Society, Okmulgee, September 27, on "Complications and Sequelae of Head Injuries"

OREGON

Society News—Dr Frederick Lemere, Seattle, addressed the Central Willamette Medical Society, Newport, September 4, on "Insulin Shock Treatment of Psychosis"—Dr George F Cooper, San Francisco, addressed the Lane County Medical Society, Eugene, September 17, on "Treatment of Pneumonia"

State Medical Election—Dr Charles E Sears, Portland, was chosen president-elect of the Oregon State Medical Society at the annual meeting in Salem, October 21-23, and Dr Charles T Sweeney, Medford, was inducted into the presidency. The following vice presidents were elected: Drs William W Baum, Salem, Richard B Adams, Portland, and Dean P Crowell, North Bend. Dr Morris L Bridgeman, Portland, was reelected secretary.

PENNSYLVANIA

Personal—Dr Gilmore Pontius, chief surgeon, Lancaster General Hospital, Lancaster, received the honorary degree of doctor of science from Franklin and Marshall College, Lancaster, October 3—Dr William Moore Guilford, Lebanon, will be 105 years old November 26. Dr Guilford graduated from the University of Pennsylvania School of Medicine in 1852.

Philadelphia

Personal—Dr Karl M Houser, assistant professor of otolaryngology, University of Pennsylvania School of Medicine, received the honorary degree of doctor of science from Franklin and Marshall College, Lancaster—Dr Charles A E Codman has been elected president of the Philadelphia Institute of Medical Research to succeed the late Dr Judson Daland. Dr Codman was one of the group that founded the institute in 1923.

Dr Daland Leaves Bequest for Foundation—Dr Judson Daland, who died August 14, left the bulk of his estate to the American Philosophical Society to endow "The Judson Daland Foundation for Research in Clinical Medicine." Ten per cent of the income is to be added to the principal each year. About \$35,000 from the estate is provided for personal bequests. Dr Charles A E Codman received first choice of Dr Daland's medical books and papers and the Philadelphia County Medical Society the second choice. The society also received a bronze bust of Dante. An inventory filed October 4 listed the estate at \$359,507, exclusive of realty.

Society News—Among speakers at a meeting of the Philadelphia Allergy Society, October 27, were Drs Herman Gold Chester, Pa, on "Active Immunization of Allergic Patients Against Tetanus and Follow-Up Study" and John A Murphy, 'Propadrin Hydrochloride in the Treatment of Allergic Manifestations'—Speakers on the program of the Philadelphia Academy of Surgery, November 1, were Drs Thomas A Shallow and William T Lemmon, on 'Benign Tumors of the Stomach' Norman E Freeman, Philadelphia, and Irvine H Page, Indianapolis, "Prevention of Shock from Hemorrhage by Total Sympathectomy", Eldridge L Eliason and John Paul North, 'Morbidity of Cholecystectomy'.

Pittsburgh

Society News—Drs George J Feldstein and William H Clark addressed the Pittsburgh Pediatric Society October 15 on 'Amaurotic Family Idiocy' and 'The Use of Irradiated Milk in Infant Feeding' respectively—Dr Alice Hamilton, Boston, was the guest speaker before the Allegheny County Medical Society October 19 on 'New Developments in Industrial Poisons'. Drs James Leroy Foster and Joseph M Cameron presented papers on 'Reasons for Failure to Diagnose Syphilis in the New Born and Facial Neuralgias Causes and Treatment' respectively. A motion picture on 'Human Sterility' prepared by Drs Paul Titus Benjamin R Almqvist Ralph E Tafel and Robert H McClellan was shown.

SOUTH CAROLINA

Society News—At a meeting of the Seventh District Medical Society at Cain's Mill near Sumter September 9 the speakers were Drs Thomas Preston White, Charlotte, N C, on "Chronic Arthritis and Its Treatment", Thomas C Davison, Atlanta, "Treatment of Goiters", Joseph H Cannon, Charleston, "Congestive Heart Disease," and Rupert H Fike, Atlanta, cancer—Drs George R Wilkinson and John F Ramey, Greenville, addressed the Greenwood County Medical Society, September 30, on "Abdominal Manifestations of Cardiac Disease" and 'Extracardiac Causes of Heart Failures' respectively.

SOUTH DAKOTA

Faculty Changes at Medical School—The University of South Dakota School of Medicine, Vermillion, announces several changes in the faculty. Einar Leifson, Ph D, formerly instructor in bacteriology at Johns Hopkins University School of Medicine, Baltimore, has been appointed professor of bacteriology, succeeding Charles A Hunter, Ph D. William H Waller, Ph D, recently instructor in anatomy at George Washington University Medical School, Washington, D C, is professor of anatomy, succeeding C M MacFall, Ph D, and John T Manter, Ph D, recently at Columbia University, New York, is assistant professor of anatomy. H Morrow Sweeney, Ph D, formerly instructor in physiology, Tulane University of Louisiana School of Medicine, New Orleans, is head of the department and professor of physiology, succeeding Harry V Atkinson, Ph D, who is now professor of pharmacology and materia medica.

TEXAS

Changes in the University Faculty—Among recent changes in the faculty of the University of Texas School of Medicine, Galveston, the *Texas State Journal of Medicine* reported the following resignations: Drs Frances J L Blasingame, assistant professor of anatomy, John F Pilcher, associate professor of pathology, and J John Westra Jr, Ph D, assistant professor of physiology. Dr Samuel R Snodgrass, Franklin, Ind, has recently been appointed assistant professor of neurosurgery.

Personal—Dr Louis R Brown, Little Rock, Ark, has been appointed superintendent of the Galveston State Psychopathic Hospital, succeeding Dr Giles W Day. A new addition to the Galveston hospital providing for forty-five patients was recently opened—Dr Brooks Stafford, Angleton, has been appointed health officer of Brazoria County to succeed the late Dr Samuel B Maxey—Dr Samuel J Pate, Woodville, was honored with a testimonial dinner September 2 given by physicians of Woodville and Beaumont, where he practiced for many years. Dr John A Hart, Beaumont, was toastmaster.

Society News—Drs Alfred L Hathcock, Palestine, and Harry M Spence, Dallas, addressed the Henderson County Medical Society, Athens, September 6, on "Sarcoma of the Uterus" and 'Frequency of Urination in Women' respectively—Drs Thomas M Oliver and Horace T Ayneworth, Waco, were the speakers at a meeting of the McLennan County Medical Society, Waco, September 14, on "Advances in the Treatment of Varicose Veins" and "ABC's of Electrocardiography" respectively—At a meeting of the Tarrant County Medical Society, Fort Worth, September 7, the speakers were Drs Clarence C Garrett on 'Heat Exhaustion', James H Hook, 'Poliovirus' and John W Tottenham Jr, "Immunizing Blood Transfusions"—The Dallas Southern Clinical Society will hold its tenth annual clinical conference, March 14-17 1938, at the Adolphus Hotel—Dr Samuel A Shelburne among others addressed the Dallas County Medical Society, October 13, on 'The Rational Use of Acacia in the Management of the Nephrotic Syndrome'.

VIRGINIA

Personal—Dr Charles L Savage Richards, has resigned as health officer of Tazewell, Buchanan and Russell counties—Dr Edward N Schilling, chief medical officer of the Veterans Administration Facility, Kecoughton, has been transferred to Atlanta as chief medical officer of the Veterans Administration Facility there it is reported.

WEST VIRGINIA

Society News—Dr Hugh H Trout Roanoke, Va, addressed the Kanawha Medical Society September 14 in Charleston on 'Varicose Ulcers'—Dr James Torrance Rugh Philadelphia addressed the Ohio County Medical Society, Wheeling October 8, on 'Some Problems of the Lower Part

of the Back."—The Hospital Association of West Virginia held its annual meeting in Wheeling, October 7-8.—Dr Curtis F. Burnam, Baltimore, addressed the Harrison County Medical Society, Clarksburg, September 2, on cancer of the uterus.

WISCONSIN

Memorial Lecture by Dr. Gross—Dr. Louis Gross, New York, delivered the Lippitt Memorial Lecture at Marquette University School of Medicine, Milwaukee, October 15, on "Considerations Concerning Coronary Occlusion." Dr. Gross was one of the seventeen persons killed in the crash of the airplane *Mauliner* in Utah, October 17.

University News—Dr. Everett D. Plass, Iowa City, addressed the University of Wisconsin Medical Society, Madison, in a joint meeting with the medical school preceptors, October 15, on "Polyneuritis of Pregnancy." Dr. William Snow Miller, emeritus professor of anatomy, made an address, October 21, on "Some Vital Points in the Architecture of the Lung."

PHILIPPINE ISLANDS

Society News—At a meeting of the Manila Medical Society, recently the speakers were Drs. Honoria Acosta-Sison and Juan S. Galang, on "Chorionepithelioma with Report of Six Recovered Cases," and Dr. Pablo Anzuers, "Is Therapeutic Abortion Legal?"

GENERAL

Americans at International Congress—Thirty-seven American physicians attended the International Congress on Hepatic Insufficiency in Vichy, France, September 16-18. The following presented papers: Drs. Anthony Bassler, New York, Lathan A. Crandall Jr. and Andrew C. Ivy, Chicago, Norman W. Elton, Reading, Pa., and Hyman I. Goldstein, Camden, N. J., all speaking on "Hepatic Insufficiency in Its Relation to General Nutrition and Especially to the Nervous System."

Society News—Dr. Robert Tait McKenzie, Philadelphia, was elected president of the Academy of Physical Medicine at the annual meeting in Philadelphia, October 19-21. Drs. Roland A. Case, Cleveland, and William H. Schmidt, Philadelphia, were elected vice presidents, and Dr. Herman A. Osgood, Boston, was reelected secretary.—The Pacific Coast Society of Obstetrics and Gynecology held its annual meeting in San Francisco, November 3-6.—The Society for the Study of Asthma and Allied Conditions will hold its fall meeting at the Waldorf-Astoria Hotel, New York, December 11. Dr. William C. Spain, 116 East Fifty-Third Street, New York, is secretary.

Research Fellowships Available—The National Research Council announces that fellowships in the medical sciences will be available for the year beginning July 1, 1938. These fellowships are open to citizens of the United States and Canada who have the degree of doctor of medicine or doctor of philosophy. The announcement notes that the fellowships are intended for recent graduates and not for persons already professionally established. Applications must be filed on or before Jan. 1, 1938, and fellows will be appointed at a meeting of the medical fellowship board about March 1. For further information address the secretary of the Medical Fellowship Board, National Research Council, 2101 Constitution Avenue, Washington, D. C.

New Officers of Radiological Societies—Dr. Raymond G. Taylor, Los Angeles, was chosen president-elect of the Radiological Society of North America at its recent annual meeting in Chicago, and Dr. Howard P. Doubt, Detroit, was installed as president. Dr. Donald S. Childs, Syracuse, N. Y., is the secretary. Dr. John W. Pierson, Baltimore, was named president-elect of the American Roentgen Ray Society and Dr. Byrl R. Kirklin, Rochester, Minn., was installed as president. Dr. Carleton B. Peirce, Ann Arbor, Mich., was chosen secretary. The next annual session will be held at Atlantic City, probably Sept. 20-23, 1938. New officers of the American College of Radiology include Drs. James M. Martin, Dallas, Texas, president, and Eugene P. Pendergrass, Philadelphia, secretary.

Fellowships in Psychiatry—The National Committee for Mental Hygiene has available a limited number of fellowships for training in extramural psychiatry provided by the Commonwealth Fund and other sources. Fellows will be assigned for one or two years to a selected child guidance clinic; the term and plan of the fellowship to be determined by the peculiar needs of the fellows. Candidates for fellowship awards

should have had at least two years of psychiatry in an approved mental hospital service, in addition to other qualities fitting them for extramural service. This provision of training fellowships comes in response to a definite paucity of personnel in this field; the announcement stated. Requests for further information about these fellowships, and applications therefor, should be addressed to Dr. George S. Stevenson, The National Committee for Mental Hygiene, room 822, 50 West Fulton Street, New York, N. Y.

Impostor Impersonates Pathologists—Several pathologists have recently reported that a man posing as a pathologist has been using the name of Dr. Eustace L. Benjamin, associate professor of pathology at Northwestern University Medical School, Chicago, to obtain money through fraudulent checks. Dr. Emmerich von Haam, Columbus, Ohio, who first reported cashing a check for the man in the belief that he was Dr. Benjamin, says that the impostor has since called himself Dr. von Haam and Dr. Simonds of Chicago. Whatever name he uses, he refers to other pathologists as his close friends. He is familiar with medical terminology and has a fair knowledge of laboratory methods. This man is about 40 years old, of average size, with dark eyes and hair tinged with gray. His neck is short and thick, his face is round and his small eyes bulge somewhat. Dr. Benjamin reported that he cashed a check during the past winter for this man who at that time said he was a pathologist from Mercy Hospital, Canton, Ohio. Checks for amounts ranging from \$10 to \$100 have been cashed for him by pathologists in several laboratories.

CANADA

Graduate Course at Dalhousie—A refresher course in medicine and surgery was presented at Dalhousie University Faculty of Medicine, Halifax, N. S., for a week beginning August 30. The instructors were Drs. Howard M. Clute, Boston, on "Management of Abdominal Emergencies," Leo Kanner, Baltimore, "Modern Trends in Psychiatry" and Richard A. Kern, Philadelphia, "Clinical Allergy" and "Duodenal Ulcer."

Society News—Dr. Alfred Howard Spohn, Vancouver, addressed a meeting of the Vancouver Medical Association, October 5, on "Conditioned Reflexes and Their Relation to Medical Practice."—Dr. Charles H. Hair delivered his inaugural address as president of the Academy of Medicine of Toronto, October 5, on "How Medicine Is Influenced by Economic Conditions."—The North Pacific Society of Internal Medicine held its fall meeting in Victoria, B. C., with Dr. Edwin G. Bannick, Rochester, Minn., as guest speaker, on nephritis, blood sedimentation tests and sulfanilamide therapy.

The Poliomyelitis Epidemic in Ontario—A summary of the recent outbreak of poliomyelitis in Ontario, published in the October issue of the *Canadian Public Health Journal*, states that 2,180 cases were reported in the province from January 1 to October 2. The largest number in any one week was 413 for the week ended September 4. There were 697 cases in Toronto. The provincial health department has records of 450 cases in which there is some degree of paralysis or weakness. For treatment of these patients a special orthopedic hospital has been opened in Toronto with accommodations for 100 children. Three weeks' free treatment is given. Twenty-three respirators have been made available with funds provided by the provincial health department.

Deaths in Other Countries

Sir John W. Thomson-Walker, consulting urologist and emeritus lecturer on urology, King's College Hospital, London, Hunterian professor, Royal College of Surgeons of England, 1907, author of various publications on urology, president of the fifth International Congress of Urology, died October 6 in Aviemore, Inverness-shire, Scotland, aged 60.—**Sir John W. Moore**, formerly professor of the practice of medicine, Royal College of Surgeons in Ireland, author of textbooks, and for many years editor of the *Dublin Journal of Medical Science*, former president of the Royal Academy of Medicine in Ireland and of the Royal College of Physicians of Ireland, died October 12, aged 91.

CORRECTION

Assistant Professor of Orthopedics—Dr. Jesse T. Nicholson has been promoted to assistant professor of orthopedics in the Graduate School of Medicine, University of Pennsylvania, and not assistant professor of obstetrics as noted in THE JOURNAL, October 23, page 1372.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct 9, 1937

The British Medical Association and the Public

The British Medical Association has made a new departure. A special meeting of the council was convened to consider a memorandum of proposals for organizing public opinion on behalf of the association and improving the public relations of the medical profession generally. It seems to the council that although individual members of the public have, as a general rule, high regard for their own physicians, the public as a body is often suspicious and critical of the medical profession as a whole and of the British Medical Association in particular. Physicians are news when they are in trouble, as when charged with drunkenness, when they appear in the divorce court or when charged with negligence. The public is in great measure ignorant of the work of the association's on medico-social problems. It is reminded of the national health insurance service only when a defaulting physician is fined, it knows nothing of the association's plan for the extension and amplification of this service or for an improved maternity service. The council is advised that the association can apply propaganda and advertisement without compromising the dignity or status of the profession. The objectives would be to instruct and improve public opinion regarding physicians, to enlighten the public regarding the work of the medical profession, to advise the press to be more constructive and less destructive, more informative and less irresponsible in handling its news regarding physicians and the association. The council decided to establish a propaganda fund to be financed from the association funds and by the trustees of the national insurance defense fund for a period of three years. There will be a propaganda committee and a public relations officer.

Sciatica Due to Prolapse of an Intervertebral Disk

Sciatica due to prolapse of an intervertebral disk is a condition that has only recently been recognized. At a meeting of the Section of Orthopaedics of the Royal Society of Medicine, Mr Norman L. Capener reported a case which he had cured by laminectomy. He referred to a paper which he had read at a meeting of the British Orthopaedic Society in 1934, when he discussed the influence of certain spinal movements on the cause of sciatica. As the result of radiologic studies of normal spines he stated that sciatica due to compression stresses on nerve roots was more apt to occur in hyperextension but that traction stresses were most likely to be the cause of trouble when the lumbosacral spine was hyperflexed. He then demonstrated the opening up posteriorly of the intervertebral interval in hyperextension and remarked on the ease with which prolapse of the nucleus pulposus could occur in this position. He now said that most cases of traumatic sciatica occur with a force exerted in the flexed position, which is often associated with the lifting of heavy weights. It was easy to understand the possibility of a portion of the disk being extruded like a pea out of a pod.

A railway engine driver, aged 41, sprained his back at work in August 1935 and soon began to suffer severe pain in the right buttock and thigh, which was increased after exertion but relieved by lying down. When seen in September he had typical right-sided sciatica with homolateral scoliosis, rigid lumbar spine, gluteal wasting and diminished Achilles reflex. There were no sensory changes. X-ray examination was negative. For six months he received the usual conservative treatment—radiant heat massage, plaster jacket, sciatic nerve stretching, epidural injections and manipulations under an anes-

thetic—all without lasting improvement. In the summer of 1936 the sciatica became much worse and involved the opposite side.

Oct 30, 1936, lumbar puncture was performed at the level of the third and fourth lumbar vertebrae. The pressure was found normal and the usual rise occurred on jugular compression. Procaine hydrochloride solution was injected into the epidural space and produced a small rise in intrathecal pressure, which did not correspond to the amount injected, suggesting partial spinal block. Two days later 5 cc of iodized oil was injected into the theca at the first lumbar interspace and radiography strongly suggested a constriction of the theca arising from the front of the canal in the region of the disk between the fourth and fifth lumbar vertebrae. The injection produced severe pain, which had to be relieved by a further lumbar puncture.

November 12, laminectomy was performed on the fourth and fifth lumbar and first sacral vertebrae. The constriction mentioned was confirmed: there was no pulsation below this level, and the posterior projection of the disk was verified. Moreover, the constriction of the dura appeared to be circumferential. This was widely opened up in the middle line, the disk was not interfered with and the wound was closed. After recovery from the operation the patient had immediate and complete relief, and all signs of sciatica disappeared. He resumed his usual work, which involved coaling the furnace.

PARIS

(From Our Regular Correspondent)

Oct 9, 1937

Second International Gastro-Enterologic Congress

The second Gastro-Enterologic Congress was held September 13 at the Faculté de médecine. More than 600 specialists from thirty-five foreign countries attended the meeting. Prof M. Loeper was president of this year's congress and introduced Prof Pierre Duval, who called attention to the necessity of team work between surgeons who specialize in gastro-intestinal surgery and gastro-enterologists who make the diagnosis and carry on the after-treatment. The first question to be discussed was early recognition of gastric cancer, of which the clinical and serologic aspects were the subject of a paper by Carnot and Caroli. They said that the diagnosis was usually made too late so that removal is impossible in three fourths of the cases when exploratory laparotomy is performed. This is often due to the latent character of the initial symptoms. In one third of the cases, the onset dates back about five months from the time at which the patient is first seen. The only way in which the high percentage of inoperability can be reduced would be the routine use of x-ray examination in all suspicious cases. A fourth of the patients neglect to have this done in spite of a history of digestive disturbances of long duration. There is nothing pathognomonic about the early symptoms. Anorexia is observed in only 14 per cent of patients and the pain is usually relieved by medication. The question of age has been found to be of no importance. Familial antecedents may be of some help in the clinical history. The difficulty of making an x-ray diagnosis was emphasized and the problem which presents itself is as to whether an ulcer exists which has undergone malignant changes or whether the symptoms are terminal and indicative of a phase of inoperability. Ulcerating cancers are more common than any other type.

This paper was followed by one on x-ray diagnosis by Rene Gutmann who believed that an early diagnosis can be made if serial films are made as a routine and are correctly interpreted. At its very onset, cancer of the stomach cannot be recognized radioscopically so that this method alone does not suffice. On the other hand films that show rigidity of the stomach contour indicate an infiltrating type of cancer whereas a niche is found in the ulcerative, tumor-forming and vegetant types.

In one out of five cases, Gutmann and Bertrand were able to trace the change from a benign to a malignant form of ulcer. The ulceriform cancer has the appearance of a niche with sharply demarcated borders. In these, one finds the Carman meniscus sign. The evolution of such niches must be followed at repeated examinations. The therapeutic test consists in intravenous protein treatment. If the x-ray signs persist, immediate operative intervention should be advised. The pathologic anatomy, physiopathology and biochemistry and the value of gastroscopy and of gastrophotography in cancer of the stomach were the subjects of papers by Cagnetto of Italy, Bottin of Belgium, Felsen of the United States, Moutier of Paris and Garin and Bernau.

Bertrand of Paris reported on the aspects of ulcers developing into cancers based on microscopic studies when taken in conjunction with x-ray observations.

Charrier and Gatellier pointed out that it is impossible for a surgeon on examination of the stomach, at operation, to differentiate between a benign and a malignant ulcer.

Gosset and Duval in their general conclusions based on all the preceding papers stated that (a) clinical signs and the evidence yielded by gastric chemistry were inadequate for diagnostic purposes, (b) direct (at operation) and gastroscopic examinations are deceptive, (c) only the microscopic and x-ray examinations and therapeutic tests are of any value. If there is an association of amelioration of symptoms and of x-ray evidence, this speaks for the benignity of the lesion. If there is amelioration of the symptoms but persistence of x-ray signs, this speaks for probable malignancy, hence the key to the situation consists in repeated x-ray and clinical examinations.

Katsch, Prevot, Henning, Buerger, Staemmler and Konjetny, all German delegates to the congress, emphasized the important part played in the etiology of gastric cancer by a preceding or concomitant gastritis when associated with adenomas or polyps, which were frequently found in their cases.

Examination of Applicants in Transportation Services

One of the most interesting exhibits in this year's Paris Exposition is that of the psychotechnical department of the French transportation, urban and railroad, services. The tests given to applicants for positions as bus or street car motormen and locomotive, oil and steam propelled, engineers reveal the progress made in the last twenty years in the application of information obtained through studies in psychologic laboratories to commercial work.

A monograph has just appeared on the Paris experience by J. M. Lahy, published by Dunod. In the preface, the director of the technical division of the Paris transportation services (motor busses and subways), Mr. Bacquerisse, states that the medical examination of applicants aids in eliminating those whose cardiovascular and other conditions which will not permit heavy physical exertion and other physical defects, but only psychologic tests, will be able to exclude from work as signal tower operators those individuals who are unable to concentrate or who fatigue mentally too rapidly. The Paris transportation services employ more than 30,000 men and women (many of the latter as omnibus conductors). Scientific selection of applicants has effected an economy of more than a million francs a year. Psychotechnology is a comparatively recent science which studies how to reduce the expenditure of nervous energy, necessarily associated with every physical effort. It also aims to increase mental activity without too much of a drain on the nervous system. The limit or threshold so to speak, at which signs of mental fatigue appear is not a uniform one but is subject to individual variations. To attain the maximum return with a minimum of effort the primary condition to realize is that every worker should be mentally equipped to carry out his particular task. If he is capable of doing this in several tasks selection must be made of the one for which the applicant has the greatest aptitude.

Variations in muscular activity have a narrower range than to five or six, than those of mental activity, which vary from one to several millions. It is a mistake to think that the constant repetition of some small movement, if not followed by fatigue, is an adequate criterion of mental fitness, because in actual practice the length of time and rhythm necessary to execute it is always determined in advance. Certain individuals show signs of mental fatigue when called on to execute easy but monotonous tasks more than others. The man who is in charge of a railroad signal tower must be able to react quickly and be possessed of a good memory. Methods employed to determine professional aptitude should be objective, i. e., studied graphically.

In France, these methods have been studied during the past twenty years in the laboratory for experimental psychology of the Ecole pratique des hautes études and more recently in the psychotechnical laboratories of the French transportation services. The results of the examinations of more than 10,000 applicants for positions as motormen, signal service operators, and so on, are recorded in the recently published monograph of the director of the latter laboratory, Dr. Lahy.

Social Insurance as Applied to Railroad Employees

When social insurance was first introduced here in 1930 no provision was made for workers employed on railroads. This omission was corrected in 1931, but the rules contain some material differences from those applicable to nonrailroad employees, as follows: (a) Sickness indemnity can be paid only to the individual employee and not for any illness of the wife or husband, as the case may be, or for any illness of the children of the employee. (b) In case of absence for confinements, the worker is entitled to twelve weeks' full pay. (c) In case of illness or confinement, the worker can be cared for only by the company's physician and does not have the right, as in the case of workers not employed on railroads, to select his own medical attendant.

BERLIN

(From Our Regular Correspondent)

Sept 13, 1937

International Congress on Graduate Medical Study

The International Congress on Graduate Medical Study was held in Berlin August 21-25. Its objectives were an exchange of information on the conduct of graduate courses in various countries and the world wide promotion of graduate study. In many lands postgraduate medical education has become highly organized. For the last two years members of the German medical profession have been subject to a legislative innovation in this regard, all doctors (with the exception of university docents, directors of the larger hospitals and military and civilian physicians in government service) being required to participate every five years in a graduate course of three weeks' duration (THE JOURNAL, Nov. 9, 1935, p. 1535). Altogether, 300 hospitals in sixty-eight different German cities have been designated as institutions suitable for graduate studies. This wide distribution enables the individual physician to remain near his home while studying and thus the personal expenses entailed are kept within reasonable bounds. Moreover, no tuition fees are exacted for the courses themselves. The question of locum tenentes has shown itself to be the most difficult feature of this system since the employment of a substitute is rather costly to the practitioner. Latterly, however, a system of reciprocal substitution among physicians of each community has been worked out and in addition the placement exchange of the German Medical Association stands prepared to react in any emergency. For the accommodation of doctors in attendance on a course the establishment of a chain of convenient hostels located "physicians' homes" has been planned, several of which are already in existence. Of about 40,000 physicians in

Germany, some 25,000 will participate quinquennially in this rotated compulsory study program. The planners of German graduate curriculums have considered it desirable that each student physician should acquire a knowledge of the basic principles involved in the procedures of "nature medicine" so far as the latter have been proved valuable. Acquaintance with the fundamentals of homeopathy is also considered of importance.

At present there are in Germany three academies of graduate medical study and the foundation of a fourth is contemplated. The Berlin academy is to retain its present general character. The Dresden academy will in future concern itself principally with the problem of the integration of "Nature Medicine" within the framework of medical science as a whole. The curriculums of the Hamburg academy will be expanded to include special courses in tropical hygiene, tropical diseases and overseas medicine in general. The fourth academy, to be situated in Munich, will be set aside for a wholly new type of instruction there, in the interest of national health policy, an attempt will be made to bring the therapeutic and prophylactic services of the physician into the closest possible contact with the active worker on the job. Specifically, a doctor enrolled at the Munich academy will be made conversant with industrial physiology and with the so called early lesions of occupational disease and will study the feasibility of prophylactic measures.

Accordingly, one may truly say that in Germany postgraduate medical study, already highly organized, continues to develop.

The transactions of this well attended international congress were characterized by a lively symposium on methods in which the representatives of thirty-six nations participated. Of even greater importance were the papers submitted by eminent university professors on fundamental pedagogic problems of the various specialties. Other delegates provided interesting descriptions of how the organization of graduate medical study was influenced by conditions peculiar to their respective countries. Dr. Wagner, the national fuhrer of physicians, bid the delegates welcome in an address entitled "The Place of the Physician in the New Germany." He dwelt mostly on topics such as the Nuremberg laws against Jewish physicians, the problems of hereditary disease, the new German education and the organization of the National Chamber of Physicians.

Professor Borst of Munich, pathologic anatomist, then discussed "Research and Graduate Study." Speaking from the standpoint of general pathology he spoke of the demands of medical practice and the interrelation of the various specialties. The universities have undergone marked expansion in order to meet the educational standards of the present day. A great scientist, said Borst should know how to combine strict interpretation of results and his own confident expectation; he should also be able to bring his scientific opinions into harmony with his weltanschauung. Graduate study ought not only to facilitate progress in the specialties, it should also help to explain their interdependence and the importance of each to medical science as a whole. Thus will be avoided that too great preponderance of theory which often tends to obscure the practical application of specialties. Only a doctor who has engaged in research can feel sure of himself in the presence of manifold and varying clinical pictures. The need of a broader outlook differs with the individual physician. According to investigators of the German situation, most physicians could profit by graduate study, and especially by research study.

Dr. Blome described the organization of graduate study in Germany and several of the foreign delegates did likewise for their respective countries: the United States, represented by Dr. Foster Kennedy, France, Austria, Japan, Italy, Switzerland, Latvia and Finland. Special themes were then discussed. Sauerbruch spoke on the graduate education of the surgeon. There was also considerable discussion of the anticancer cam-

paign. Dr. Schraenen, secretary general of the Belgian Anticancer Association, introduced this topic. He was followed by Professor Auler of Berlin, who read the principal paper wherein he discussed the systematic organization of an effective fight against cancer. Various foreign delegates also talked on the cancer problem. Other major topics were occupational and industrial medicine, the graduate study of obstetrics and so on.

One result of this international congress was a resolution passed at a meeting of the delegates from twenty-five countries. It provided for the establishment of an International Academy for Graduate Medical Affairs. A constitution and by-laws for the new organization will be worked out by a committee consisting of Borst of Munich, chairman, Adam of Berlin, secretary general, Bastianelli of Rome, Blome of Berlin, Proctor of London and Roussy of Paris. This international academy will have its permanent seat in Berlin.

The Reaction of Aluminum to Fruit Products

On account of the shortage of raw materials in Germany, the attempt has been made to introduce domestic substitutes for foreign metals, e. g., aluminum for tin. Dr. Reif undertook at the National Health Bureau an investigation to determine to what extent aluminum can supplant other metals used in the handling of food. Experiments were conducted with food-stuffs of an acid character such as apple sauce and plum jam. Two brands of aluminum, one 99.5 per cent and the other 99.8 per cent pure were tested. Numerous experiments showed that the corrosive effect of these acid containing foods on aluminum was particularly dependent on the water and extract content. In general, the metal of 99.8 per cent purity proved its superiority to that of 99.5 per cent. Alloys of aluminum showed themselves the least resistant to the corrosive action of fruit products. Reif does not attempt any medical evaluation of the data. His report is interesting in the light of earlier studies also sponsored by the National Health Bureau and on the basis of which it was concluded that no danger is entailed in the use of aluminum vessels (THE JOURNAL, Dec 13, 1930, p. 1849).

AUSTRALIA

(From Our Regular Correspondent)

Sept. 9, 1937

Australasian Medical Congress

Under the presidency of Sir Henry Newland, 450 delegates from Australia, New Zealand and Great Britain attended the 1937 Australasian Medical Congress, held at Adelaide from August 23 to 25. This congress marked the jubilee of such meetings in Australia. The chief features of the congress were the laying of the foundation stone for the Institute of Medical Science in Adelaide and a major discussion on tuberculosis in Australia. At the official opening, the gold medal of the British Medical Association was presented to Sir Henry Newland, who was the fourth recipient since its institution in 1922. Sir Henry had been secretary of the South Australian branch of the British Medical Association from 1909 until 1914 and became president in 1920. He had performed great service for the federal branch and is at present a vice president of the British Medical Association in Great Britain. He was a founder and the first president of the Royal Australasian College of Surgeons. For many years he was lecturer in surgery and operative surgery at the University of Adelaide. In the war he served with distinction.

The main themes in Sir Henry Newland's presidential address were the application of scientific knowledge to human betterment, the influence of heredity on constitutional disease, the aging of the population, the progress of specialism and the possibilities of national insurance in Australia. Medicine so far has concerned itself with the conquest of diseases which have their origin in the environment of man. These are the diseases of infancy and adolescence. It can claim to have saved the

babies But if babies are surviving the environmental diseases, they must die in adult life, or senescence The diseases of the latter half of life are constitutional diseases, that is, breakdowns of the various organ systems which in their combination form the individual Reference was made to the extraordinary growth of specialism The specialist himself often tended to fail to see any point of view but his own To succeed in the pursuit of a specialty, he must concentrate on its literature and technic His concentration would almost inevitably make him narrow in his outlook and a source of danger in general medicine It was therefore of the greatest importance that before a man was fit to limit his practice to a specialty he should be thoroughly trained in general medicine and surgery The surgical specialist of today is cast in a different mould from the surgeon of 100 years ago A surgeon of today must have a knowledge of the biologic, physiologic and psychologic disturbances inseparable from all disease processes Figures were given to show the result of modern care in the reduction of mortality from operations on the kidneys In operations for kidney stones, mortality had decreased from 19 per cent in 1902 to 9 per cent in 1914 and to about 1 per cent in 1924 A recent review showed an average mortality after operation of 4 per cent, and several large series of cases had been reported without a death Figures could be quoted to show similar results in other fields But the changing rate of mortality is not the only change that is taking place in surgery The operation lists of today differ greatly from those of thirty years ago It is of general comfort to know that surgery has become more preservative and less extirpatory Indeed, it is paradoxical that the chief aim of the scientific surgeon should be to find ways of avoiding surgery The tendency to say "this organ or that structure is diseased, let us cut it out," is giving place to an attempt to save it

Recognition of the fact that even in a special branch of medicine it was not possible for one man to be the repository of all the knowledge of detail needed for diagnosis and treatment had led to another change That was the development of the unit, or team, system That aimed, without interfering with the practice of bringing the medical student into intimate contact with the patients, at grafting on the well tried English system a means whereby clinical education might be placed on a more scientific basis than had been possible before Not many years ago the governing bodies of the great hospitals considered that it was the duty of the surgeons to do all operations Now it was being realized that the routine operative work could be done as well by the younger men, leaving more time for the seniors to do progressive work

One of the great needs of the present is hospitals in which patients with chronic diseases can be adequately treated and where the disease can be made the subject of intensive research Sir Henry said that one of the great advances of the last fifty years was that the profession had learned to recognize the importance of the prevention of disease as an essential part of a national health service It was recognized now that doctors had a part to play in the attainment of that state of positive good and efficient physical and mental health which was something infinitely better than the mere absence of disease Physical education and mental hygiene should take their place among the great social services as a branch of public health, like housing, sanitation and nutrition, through which it was hoped to achieve a high standard of physical excellence, combined with mental and moral discipline It was of interest to note that the University of Adelaide and the South Australian branch of the British Medical Association had under consideration a suggestion by Sir Stanton Hicks to found a health clinic

Speaking of the probability of the introduction of compulsory national health insurance, Sir Henry said that, for better or worse, national health insurance was now an accepted part of

English life However effective positive means of insuring health and preventing disease might be, there would always be some who would require examination and treatment How effective the contemplated measures would be would depend on whether the insurance scheme had the whole hearted support of the medical profession Whether that support would be forthcoming would depend on the bill to be presented to the commonwealth parliament

With regard to the value of graduate work, Sir Henry said that the necessity for it had been fully recognized by the profession but not, unfortunately, by the universities with one exception—Sydney Was it too much to hope that Melbourne and Adelaide would follow the same enlightened policy? The Royal Australasian College of Surgeons had been active in the cause of postgraduate study and surgical research

TUBERCULOSIS IN AUSTRALIA

A complete review of the problem of tuberculosis as it exists in Australia was the motif of the congress, and it occupied a plenary session This disease claimed in South Australia more than three times as many victims as the total for all other infectious diseases In opening the discussion, Dr M J Holmes, senior medical officer of the Commonwealth Department of Health, showed by a series of graphs that there was a pronounced death rate from tuberculosis in young women in South Australia, rising to 96 per hundred thousand in age group 25 to 29 years compared with 60 for Australia and 50 in New South Wales The mortality rate in age group 20 to 24 years in South Australia (85 per hundred thousand) was about 40 per cent greater than in New South Wales (51) It was thought that the high mortality in young females compared with males might be due to the special stress placed on the body in child bearing and to the strain of present day life The mortality from human tuberculosis of bovine origin was now very low in Australia and had declined much more rapidly than the mortality from tuberculosis of human origin That might be attributed mainly to smaller dosage of infection through the milk supply Deaths from tuberculosis in Australia were almost exclusively due to the human strain of infection Consequently our main object must be the breaking of the human chain of infection Regarding measures for the control of tuberculosis, it was considered essential that all the activities within each state should be under the control of a state director of tuberculosis engaged full time on direction and coordination and given all necessary powers and facilities The clinic system was the foundation on which all effort for the control and eradication of tuberculosis must be based Clinics should reach out into the community to maintain the persistent hunt for the earliest manifestations of the disease There should also be a mobile clinic Early diagnosis was an essential objective of the clinic system The examinations, physical and x-ray, should be periodic and should be most frequent and careful between the ages of 15 and 25 years The high mortality in women from 20 to 30 emphasized the need to look for early evidence in childhood and early adult life

One of the greatest difficulties in the fight against tuberculosis was the economic one of maintaining the family of the tuberculous sufferer in a reasonably good state of nutrition and in a suitable environment The invalid pension paid was utterly inadequate to provide suitable nutrition and environment The position of the tuberculous ex soldier was much better, as the repatriation department provided not only excellent treatment but a good pension It was considered of the greatest urgency that some system of monetary allowance should be established which would provide adequately for the family of tuberculous civilian patients and that the allowance should be paid in full when the patient was under treatment at an institution as well as when he was under treatment in his own home There was a need for accommodation for the patient who has not developed an active focus of disease—the clinic

with a positive tuberculin skin reaction, who was ill nourished or unhealthy, or who for any reason should be removed for a time from any source of possible infection, and whose resistance required building up. Preventoriums formed the essential links in the system for preventing the development of fresh foci of infection in the community, and they should be provided by the state. Last year 2,836 persons died from tuberculosis in Australia. The cost to the commonwealth and state governments in pensions and in treatment was more than a million pounds a year. If tuberculosis mortality had continued at the same rate as in 1880, the governmental expenditure would now exceed five million pounds a year, instead of one million. The success already attained in fighting tuberculosis was therefore saving Australia millions of pounds every year. The eradication of the disease, which is a practical ideal in this country, would save millions of pounds in the future. Measures directed to the total eradication of the disease would cost less over the next twenty years than is spent at present in partially checking the disease. The success already attained by our incomplete and ill balanced methods is an earnest of the infinitely greater success which would follow the persistent application of whole-hearted measures. We should aim at nothing less than a commonwealth free from tuberculosis.

Sir Robert Philp teaches his students that the best climate for tuberculosis is that which woos the patient most into the open air. In this respect Australia is fortunate. With our great natural advantages in climate and in a relatively high standard of living, we can look with nothing but dissatisfaction on the existing mortality rate from tuberculosis in Australia. Dr Cotter Harvey, who was the next speaker, was in accord with Dr Holmes. For a campaign to be successful, there were four essentials: an adequate public health organization, a recognition of the part played by the general practitioner, a careful education of the layman, and a thorough education of the medical student in chest diseases. There was need for reform in what was complacently called "sanatorium treatment" in this country, as it had in many cases fallen far below modern standards, although there were some shining exceptions. Contact examination should include all persons with whom the patient had been in close contact. Nor should older people escape examination. Grandfather's so-called bronchitis might have infected many grandchildren. The x-ray survey of selected groups would prove to be the most profitable advance in preventive medicine, provided the utmost care was taken in the interpretation of the films. Finally, the standard of living among the lower classes should be improved and an endeavor made to ensure an adequate diet for all. Tuberculosis was the one disease to which a well fed body was more resistant. Dr Harvey pleaded for a sympathetic consideration by public health authorities and the Australian governments of tuberculosis control. Federal and state governments have had placed before them carefully considered programs by competent authorities, but we still await the day when some practical moves will be made. In this respect Australia is lagging behind most countries, even admitting that our mortality is among the lowest in the world. A continuance of the present policy of apathy and delay in financing a comprehensive campaign against tuberculosis, a preventable disease which in Australia is responsible annually for the deaths of nearly 3,000 persons, more than half of whom are under the age of 45, is not merely a moral crime: it is an economic blunder.

Tuberculosis in man could not be adequately dealt with unless consideration was given to the knowledge gained by study of the disease in the lower animals, said Dr L. B. Bull, director of the Divisions of Animal Health and Animal Nutrition in the Council for Scientific and Industrial Research. All the domesticated animals were susceptible to the disease and it varied in frequency in different species. Man could become infected by the use of animal products as food or he

might himself infect one or more species, which, in turn, might spread the disease among their own species as well as among human society. Tuberculosis was most common in cattle, fairly common in pigs, not uncommon in dogs, but rare in sheep and goats. It was common in birds, particularly in the northern hemisphere, and also affected wild animals in captivity. Outlining the control of tuberculosis in animals, Dr Bull said that systematic tuberculin testing and destruction of infected animals was an ideal method for the eradication of tuberculosis. Dr Harvey Sutton considered that insufficient data were available about tuberculosis, particularly with regard to the number of early cases treated. There should be more information, particularly about infection among medical men themselves.

Cases in which surgical intervention could be employed in the treatment of tuberculosis were discussed by Grey Turner, professor of surgery at the University of London, in his presidential address to the surgical section of the congress. One question that needed more attention, he said, was that of the survival of the activity of disease germs. Cases diagnosed as "swollen glands" might be treated successfully in the youth of a patient and many years afterward the neck might be found to contain glands in a tuberculous state. It could be said sometimes of the tubercle bacillus that it "was not dead but sleepeth." Many of the unexplained deaths of old men were due to general tuberculosis, which had remained a latent infection from infancy.

SHOULD TUBERCULOUS PATIENTS MARRY?

The question whether tuberculous patients should be allowed to marry or to have children was discussed at the plenary session. Although there was a sharp diversity of opinion about preventing such marriages by law, it was generally agreed that persons suffering from tuberculosis in an advanced state should not marry and that the birth of children to a tuberculous woman, under certain conditions, should be prevented. Dr J. G. Hislop of Western Australia, who had led the discussion from the medical aspect, said that it seemed that a dogmatic answer could not be given to the question but that each case should be dealt with on its merits. The main factors, so far as the female was concerned, were, first, the length of time that arrest of the disease had been known, and, second, the responsibilities and duties that the marriage would bring to her. When tuberculous activity was present but the infiltration was not gross, he would include both sexes and state that financial circumstances might sanction a marriage that, in other circumstances, one would view unfavorably. Dr Hislop was in general opposed to marriage, but he considered that when radiologic and clinical tests had shown freedom from activity for two years it could be allowed. In making a decision on this point, he was swayed by the intelligence of the couple and their ability to see the reason for advice given them and to carry out that advice. Thus the question: Should the tuberculous patient marry? must be answered by a No, except when the possibilities of arrest of the disease are considerable. With regard to the question of childbearing in a tuberculous woman, it was considered that every woman with an active lesion should be advised not to have a child. It would be a potential tuberculosis patient and might be infected by the mother in her last few months of life. Dealing with the public health aspect of tuberculosis and marriage, Dr F. S. Hone of South Australia said that however successful impersonal and general administration might be in other departments of the campaign against tuberculosis, when doctors dealt with the marriage problems of the tuberculous they had to deal with practical problems affecting two individuals and their relatives and dependents. Legislation can be passed regarding the necessity for production of health certificates before marriage, but how far does that get us? The most successful campaign would

be that waged under the closest cooperation between medical practitioners and administrative officers who came into intimate contact with individuals and their practical problems. It was evident that if marriage was to be forbidden in every case of tuberculous infection a large proportion of the population would be shut out. Every patient must be dealt with as an individual case and the fullest consideration be given to all aspects of the patient's life. When there was clinical evidence of active disease with tubercle bacilli present in the sputum in individuals seen before marriage, they would be unanimous in forbidding marriage until the individual had ceased to be infective, and in most cases until three years later.

Dr T. G. Wilson of South Australia gave a paper on the obstetric aspect. One of the most animated discussions of the congress followed, with fifteen speakers taking part. Some considered that doctors should try to retain a hopeful outlook for a young engaged couple and not face them with a "catastrophic no," while others considered that persons definitely tuberculous should refrain from marriage and from having children.

Dr B. Hunt of Perth said that there was such a marked diversity of opinion among members that he would like a definite ruling from the meeting as to whether tuberculous patients should marry. The indisputable fact, he said, was that marriage was likely to lead to an increase of tuberculosis in the country, and it would be reasonable for the meeting to lay down a broad principle that it was opposed to marriage of a person in an advanced state of tuberculosis.

Marriages

DORAN THERMAN RUE, Orlando, Fla., to Miss Mildred Chambers of Chicago, June 28, in Deming, N. M.

DANIEL MINER ROGERS, New Britain, Conn., to Miss Clarinda Rosemary Moser of Rocky Hill, August 2.

BENJAMIN STALKER READ, Atlanta, Ga., to Miss Ethel Drake Houghton of Worcester, Mass., in June.

WADE HAMPTON ST. CLAIR JR. to Mrs. Mary Archer Ryland, both of Bluefield, W. Va., September 2.

VINCENT J. SIVNON, New York, to Miss Gertrude Mary Fowler of Tappan, N. Y., August 14.

HENRY VINCENT DAVIS, Chesapeake City, Md., to Miss Eloise Howard of North East, October 7.

MARTIN H. WENDROS, Philadelphia, to Miss Florence C. Siris of Camden, N. J., October 3.

CHARLES C. ENGLEHART, Harrisburg, Pa., to Miss Mary Downey of Portage, Wis., July 14.

JAMES H. GRAMMER, Fort Worth, Texas, to Miss Margaret Neil Parker of Bryan, August 26.

JOHN T. HECKER, Cedar Rapids, Iowa, to Miss Grace L. A. Darling of Moline Ill., June 12.

HORACE KENT KIBBIE to Miss Mildred Elinor Danforth, both of Fort Worth, Texas, July 28.

WILLIAM HAYS WINDLEY, Belhaven, N. C., to Miss Etta C. Carter at Washington, July 30.

IRA EDGAR FREYMAN to Miss Bertha Batt Bush, both of Weatherly, Pa., September 28.

ARTHUR EDWIN COOPER, Logan, Kan., to Miss Lillian Mary Fitch of Minneapolis, May 15.

DAVID JOSEPH GRAUBARD to Miss Florence Pearl, both of New York, August 10.

MARLIN W. HELFRICK, Belleville, Pa., to Miss Darlis Camp of Danville, June 26.

RALPH J. LOW to Miss Dorothea V. Montgomery, both of New York, recently.

HOWARD O. DEATON to Miss Lois White, both of Fort Worth, Texas, August 25.

J. ROSS SIEGEL to Miss Eve Stienberg, both of Philadelphia, August 23.

JOHN A. HOFFA, Dushore, Pa., to Miss Amy Faul of Ambler, July 14.

Deaths

Chester Tilton Stone ☉ New York, Long Island College Hospital, Brooklyn, 1915, member of an advisory board and captain of the Military Intelligence Bureau, Department of Justice, during the World War, on the staffs of the Bellevue Hospital, New York, "Bergen Pines," Ridgewood, N. J., and the Rome (N. Y.) State Hospital, at various times on the staffs of St. Bartholomew's Hospital, Woman's Hospital, St. Luke's Hospital, Post Graduate Hospital and the New York Hospital, New York, St. Lawrence State School, Ogdensburg, Long Island College Hospital, Greenpoint Hospital and Wyckoff-Heights Hospital, Brooklyn, author of "Dangerous Age in Men", at one time an associate editor of the *American Journal of Physical Therapy*, aged 50, died, August 27, in St. Luke's Hospital, of peritonitis, following perforation of the small intestine.

William Frederic Andrew George Rienhoff Sr. ☉ Baltimore, Julius-Maximilians-Universität Medizinische Fakultät Würzburg, Bavaria, Germany, 1883, member of the Southern Surgical Association, Society of Clinical Surgery and the American Association for Thoracic Surgery, fellow of the American College of Surgeons, past president of the Missouri State Medical Association and the Greene County (Mo.) Medical Society served during the World War, author of "Principles and Foibles of Cancer Research in Regard to Etiology and Nature", aged 79, died, August 29, at the Johns Hopkins Hospital, of heart disease.

Frederick Edwards Dilley, Chefoo, Shantung, China, Western Reserve University Medical Department, Cleveland, 1903, an Associate Fellow of the American Medical Association, fellow of the American College of Surgeons, for many years a medical missionary, superintendent of the Temple Hill Hospital, was a commissioner of the Red Cross for Western Siberia during the World War, formerly on the faculty of the Peiping Union Medical College, Peiping, China, at one time superintendent of the Peiping Hospital, aged 61, died, August 9, in Cleveland, of carcinoma of the stomach.

William Hamilton Long, Louisville, Ky., Kentucky University Medical Department, Louisville, 1903, member of the Kentucky State Medical Association, clinical professor of anesthesiology, University of Louisville School of Medicine, member of the Associated Anesthetists of the United States and Canada, past president and secretary of the Jefferson County Medical Society, on the staffs of the Louisville City Hospital, Children's Free Hospital and St. Anthony's Hospital, aged 57, was found dead, August 8, of an overdose of chloroform, self-administered.

William Melville Robertson, Warren, Pa., Trinity Medical College, Toronto, Ont., Canada, 1892, member of the House of Delegates of the American Medical Association in 1916, member of the Medical Society of the State of Pennsylvania, fellow of the American College of Surgeons, aged 74, formerly on the staffs of the Warren State Hospital and the Warren General Hospital, where he died, August 19, of peritonitis due to acute gangrenous appendicitis.

David Hendricks Bergey ☉ Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1884, director of research in biology at the National Drug Company since 1932, formerly professor of hygiene and bacteriology at his alma mater, member and in 1915 president of the Society of American Bacteriologists, served during the World War, author of "Bergey's Manual of Determinative Bacteriology", aged 76, died, September 5, of nephritis.

Otto Sutter ☉ St. Louis, Beaumont Hospital Medical College, St. Louis, 1892, formerly clinical professor of abdominal surgery, National University of Arts and Sciences Medical Department professor of gynecology and surgery, Beaumont Medical College, and on the faculty of the College of Physicians and Surgeons of St. Louis, at one time superintendent of the City Hospital, aged 73, died, August 1, of cerebral hemorrhage.

Rudolph Johannes Kremer, Chicago, Philipps Universität Medizinische Fakultät, Marburg, Prussia, Germany, 1913, assistant professor of pathology, University of Illinois College of Medicine, served with the German Army during the World War, aged 40, director of the pathological laboratory of the Augustana Hospital, where he died, August 14, of mitral stenosis, rheumatic heart disease and pulmonary thrombosis.

Thomas Alexander Kenyon, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895, member of the Medical Society of New Jersey, served during the World War, on the staff of the

North Hudson Hospital, Weehawken, aged 66, died, August 2, in the Fitkin Memorial Hospital, Asbury Park, N J, of a broken neck

John William Kauffman, Reading, Pa, Jefferson Medical College of Philadelphia, 1896, also a pharmacist, member of the Medical Society of the State of Pennsylvania, fellow of the American College of Surgeons, aged 64, for many years chief of obstetrics at Reading Hospital, where he died, August 4, of cerebral arteriosclerosis

Sigo Ehrlich * Bainbridge, Ga, Vanderbilt University School of Medicine, Nashville, Tenn, 1915, also a pharmacist, on the staff of the Bainbridge Hospital, served during the World War, aged 49, died, August 23, in the John D Archbold Memorial Hospital, Thomasville, of carcinoma of the rectum

Harold Austin Miller * Alameda, Calif, Cooper Medical College, San Francisco, 1903, past president of the city board of health, for many years a member and president of the free library, aged 61, on the staff of the Alameda Sanatorium, where he died, August 13, of peritonitis following ruptured appendix

Richard Bruce Pozer, Eriksdale, Manit, Canada, University of Manitoba Faculty of Medicine, Winnipeg, 1923, member of the Associated Anesthetists of the United States and Canada, served during the World War, aged 43, died, August 28, near Duluth, Minn, as the result of an automobile accident

Charles Porter Sylvester * Boston, University of Vermont College of Medicine, Burlington, 1899, for many years a member and formerly chairman of the Massachusetts State Board of Registration in Medicine, aged 59, died, August 6, at Rye Beach, N H, of cardiorenal valvular disease and uremia

Jacob Stacey John * Bloomsburg, Pa, Jefferson Medical College of Philadelphia, 1896, past president of the Columbia County Medical Society, fellow of the American College of Surgeons, president and chief surgeon of staff, Bloomsburg Hospital, aged 64, died, August 11, of angina pectoris

Jesse Thomas McCartney, Barnesville, Ohio Medical College of Ohio, Cincinnati, 1903, member of the Ohio State Medical Association, served during the World War, medical superintendent of the Barnesville General Hospital, aged 64, died, August 9, of cirrhosis of the liver

Hans Moritz Lichtenstein, Winona, Minn, Eberhard-Karls Universität Medizinische Fakultät, Tübingen, Württemberg, Germany, 1890, member of the Minnesota State Medical Association, aged 70, died, August 6, in the Colonial Hospital, Rochester, of coronary thrombosis

Leon Leopold Meyer, Memphis, Tenn, Bellevue Hospital Medical College, New York, 1897, formerly assistant professor of surgery, University of Tennessee College of Medicine, served during the World War, aged 64, died, August 5, in the Methodist Hospital, of pneumonia

Theodore Charles Erb, Boston, Harvard University Medical School, Boston, 1895, member of the Massachusetts Medical Society, for many years school physician, formerly instructor in obstetrics at Tufts College Medical School, aged 66, died, August 3 of heart disease

Robert Coulter Walker, Santa Fe, N M, University of Cincinnati College of Medicine, 1924, at one time assistant professor of bacteriology at his alma mater, served during the World War, aged 43, died, August 12, of pulmonary and laryngeal tuberculosis

William Allen Stoker, Centralia, Ill, Medical College of Ohio, Cincinnati, 1885, formerly managing officer of the Kankakee State Hospital, Kankakee, Ill, and formerly superintendent of the Anna (Ill) State Hospital, aged 73, died, August 22, of cerebral hemorrhage

Carl Herbert Meissner, Oregon City, Ore, Rush Medical College, Chicago, 1902, member of the Oregon State Medical Society, for many years a member of the school board, aged 57, died, August 21, in St Vincent's Hospital, Portland, of coronary thrombosis

Louis Martucci, Newark, N J, Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1916, member of the Medical Society of New Jersey, served during the World War, aged 46, died, August 13, of acute nephritis and acute appendicitis

Guy Hart Moates, Tarentum, Pa, University of Nebraska College of Medicine, Omaha, 1923, member of the Medical Society of the State of Pennsylvania, aged 41, died August 1 near Fort Hovle, Md, of burns received in an airplane accident

Rexford Jennings Morrell * Elmira, N Y, University of Buffalo School of Medicine 1927, on the staffs of the Arnot-Ogden Memorial Hospital and St Joseph's Hospital, aged 32, was drowned in Lake Keuka August 4, when his boat capsized

Frederic Crounse, Altamont, N Y, Albany (N Y) Medical College, 1890, member of the Medical Society of the State of New York, served during the World War, aged 68, died, August 9, of cerebral hemorrhage and arteriosclerosis

Edward Frederick Law * Fairbury, Ill, Rush Medical College, Chicago, 1903, past president of the Livingston County Medical Society, president of the township high school board of education, aged 63, died, August 5, of angina pectoris

Ralph Henry Dunning * Syracuse, N Y, Johns Hopkins University School of Medicine, Baltimore, 1911, served during the World War, for many years village health officer of Eastwood, aged 52, died, August 8, of coronary thrombosis

Joseph Raymond Pugh * Hammond, Ind, Northwestern University Medical School, Chicago, 1920, on the staff of St Margaret's Hospital, aged 43, died, August 16, as the result of a streptococcal infection of the throat

Herbert Le Roy Walker * Rock Island, Ill, Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1904, on the staff of St Anthony's Hospital, aged 56, died, August 11, of coronary thrombosis

William Henry Weston, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1878, aged 87, died, July 31, of carcinoma of the rectum, in the Good Samaritan Hospital

Paul LeRoy, St Jean, Que, Canada, Laval University Faculty of Medicine, Quebec, 1922, member of the Associated Anesthetists of the United States and Canada, aged 38, died, August 10, of heart disease

Joseph Suley Wheeler, Santa Cruz, Calif, L R C S, and L R C P, Edinburgh, Scotland, 1891, member of the California Medical Association, aged 81, died, July 22, of myocardial insufficiency

Philip Tullius Johnson, Erie, Pa, Homeopathic Hospital College, Cleveland, 1892, member of the Medical Society of the State of Pennsylvania, aged 77, died, August 3, of cerebral hemorrhage

Frank Smith Post, Portland, Ore, Western Pennsylvania Medical College, Pittsburgh, 1899, member of the Oregon State Medical Society, aged 65, died, July 12, of carcinoma of the bladder

Cicero Frank Griffin, Suffolk, Va, College of Physicians and Surgeons, Baltimore, 1893, member of the Medical Society of Virginia, aged 68, died suddenly, August 4, of coronary thrombosis

William Franklin Race, Omaha, University of the City of New York Medical Department, New York, 1884, aged 79, died, July 16, in the Douglas County Hospital, of barbitol poisoning

William Hannum, Philadelphia University of Pennsylvania Department of Medicine, Philadelphia, 1895, aged 66, died, August 2, in Bristol, of cerebral hemorrhage and arteriosclerosis

Hugh J Mulheron, Detroit, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897, aged 64, died, July 27, at Rotterdam, Holland, while touring Europe

Henry Charles L Kloepper, St Louis, St Louis University School of Medicine, 1907, member of the Missouri State Medical Association, aged 56, died, August 6, of heart disease

Hermann Ernst Schaefer, London, Ont, Canada, Western University Faculty of Medicine, London, 1905, member of the Radiological Society of North America, aged 55, died, July 14

Richard D Talbott, Fort Worth, Texas, Memphis (Tenn) Hospital Medical College, 1884, member of the State Medical Association of Texas, aged 76, died August 4

Andrew Jerome Harrington, Toronto, Ont, Canada, Victoria University Medical Department, Coburg, Ont, 1889, M R C S, England, 1890, aged 76, died, August 5

John Grant Lyman, New York, New York Homeopathic Medical College and Hospital, New York, 1891, aged 72, died, July 12, of arteriosclerosis and cerebral hemorrhage

John H Sowers, South Whitley, Ind, Cincinnati College of Medicine and Surgery, 1889, aged 71, died, August 8, of paralysis agitans and chronic myocarditis

Charles Alexander Durham Fairfield, St Catharines, Ont, Canada, Trinity Medical College, Toronto, 1890, aged 73, died July 4

George M Seigenthaler, Bethany, Mo, American Medical College, St Louis 1877, aged 84, died, August 1, of chronic myocarditis

Arthur Teninga * Chicago, Rush Medical College, Chicago, 1919, aged 42, died suddenly, August 6, of coronary thrombosis

Bureau of Investigation

VITAL-EX

Death Notice of Vital-ex Testimonial Giver Appears on Same Day as Advertisement Boosting Nostrum

Recently the Louisville Times published a notice of death of a Mr Robert Edward Walker, aged 68. On the same day appeared Mr Walker's testimonial extolling the virtues of the 'patent medicine' known as 'Vital-ex.' The news item relating to Mr Walker's demise and the Vital-ex advertising heralding Mr Walker's remarkable experience with this medicine are reproduced.

Vital-ex, apparently the same nostrum once advertised without the hyphen has been exploited chiefly by the testimonial type of newspaper advertisement for "weak, run-down, tired out, ailing, nervous, rheumatic people." Several years ago the

LOUISVILLE MAN HAD UPSET STOMACH AND CONSTIPATION FOR TWENTY YEARS; PRAISES VITAL-EX

Had Awful Stomach Sourness A Hot Sour, Water Brash Would Rise Up In My Throat, Bowels Required Strong Laxative—Now Mr Walker, 3721 Center St, Louisville, Cannot Praise This Medicine Too Highly!

You too can get relief from after meal distress stomach pains belching sluggish liver jumpy nerves sleeplessness and constipation

Just visit the VITAL-EX MAN who is now introducing and explaining this new mixture of fine pure ingredients at Taylor's Drug Store Third and Jefferson Sts.

Now read the true statement of Mr Robert Walker 3721 Center St. who is well known throughout this section

"I am a man of 72" said Mr Walker and since I was 52 years old I have suffered with an upset stomach. For years it seemed like every meal I took



MR. WALKER.

VITAL EX has worked like magic on my stomach and bowels—that awful hot sourness is gone—my heart doesn't jump—I am relieved of gas and pains in my stomach. I do not need soda anymore. Sleep better than I have in years and wake up in the morning ready to start the day with a smile and plenty of energy and strength. VITAL-EX regulated my bowels, too and I don't have to keep taking laxatives like I did.

I just can't thank VITAL-EX enough and I say to all who suffer as I did get VITAL-EX and you will get relief.

A special representative known as the VITAL-EX Man is now at Taylor's Drug Store 3d and Jefferson Sts. introducing and explaining this remarkable compound to crowds of people daily.

—(Advertisement.)

Man Expires As He Boosts Remedy In Ad

One of fate's unusual quirks occurred with the death of Robert Edward Walker 68 of 3721 Center St. on the same day a testimonial advertisement from him praising the benefits of a proprietary medicine appeared on page 1 section 1 of The Times.

One line in Mr Walker's testimonial said that since taking three bottles of the medicine "I feel like a new man."

Death of Mr Walker a retired carpenter and former city night watchman was hastened and worry was said by shock and a fall over his son and daughter in law who were injured in an automobile collision Monday night. Surviving Wife Mrs. Anna son Cary Lee

Walgreen Company was plugging Vitalex under such banner headings as "Health Leaders Acclaim Vital-ex Discovery." The health leaders in this instance were Dr W T Welch, Dr H J Perkins and Nurse Arline Hall. The advertisement was accompanied by a large photograph showing presumably, Welch, Perkins and Nurse Hall grouped around a desk, gazing at a bottle of Vital-ex. When the Bureau of Investigation looked up the 'health leaders' it was found that Dr W T Welch held a diploma from the Hahnemann Medical College and Hospital Chicago, dated 1914. No one by the name of H J Perkins was found as the holder of the degree of Doctor of Medicine. Nurse Hall was not identified.

In May 1937 the Buffalo Better Business Bureau Inc., sent to the Bureau of Investigation an advertisement of Vital ex

which, they stated, had appeared in the Buffalo Times 19, 1937. In this Vital-ex advertisement a photograph of an elderly, spectacled individual appeared over the title Dr Johnson, Buffalo, N Y. The Buffalo Better Business Bureau reported "Our immediate problem was to find out if Dr John Jackson is Our city directory and telephone directory listed non practicing physician of this name. We called John J Jackson, a chiropractor. On May 19, 1937, we called on John J Jackson and found him to be a young and very pleasant colored chiropractor—not the able person whose picture appears in the Vital ex advertisement. The photograph of Dr John Jackson was the heading 'Johnson Says.' The consumer not trained in the 'patent medicine' advertising might conceivably assume that Dr John Jackson was a distinguished and well known physician of Buffalo and that it was he who was responsible for the statements of Dr Johnson. Johnson might easily be Dr John Jackson. Since the Vital-ex label carries the caption 'Dr Johnson's Vital-ex,' it is quite understandable that Dr Johnson would state "Never in my whole experience have I run across such a remarkable product as Vital ex."

The United States Food and Drug Administration would not share Dr Johnson's views that Vital ex was a remarkable product—assuming that the current Vital ex is the old Vitalex. In October 1931 the government declared Vitalex to be adulterated and misbranded and worthless as a source of vitamin D. The article was alleged to be misbranded for the reason that the statement on the carton, "To which are added Vitamins D" was false and misleading, since the article contained no vitamin D. According to the government report, analysis of a sample of Vitalex showed that it consisted of caffeine, salicylic acid, benzoic acid, small proportions of plant drugs including licorice, wild cherry and a laxative drug, strychnine, valeric acid and volatile oil, alcohol and water.

It is not extraordinary that Mr Walker should consider himself improved or that he should write a testimonial. Both the testimonial and the death notice in the same issue are a satirical comment on the value of such testimonials.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Picri Stringent—Alpha Laboratory Inc Chicago Composition Essentially common salt sodium alum boric acid and a small proportion of picric acid. For vaginal disorders. Not anti-epileptic or germicidal as represented. Fraudulent therapeutic claims.—[N J 24626 April 1936]

Penor's (Dr) Regulator Pills—Dr George D Stoner trading as Dr G D Stoner Co Lakeland Fla Composition Essentially alkaline ferrous sulfate volatile oils including pennyroyal and a trace of unidentified alkaloid coated with sugar and colored pink. For menstrual disorders and other female troubles. Fraudulent therapeutic claims.—[N J 24627 April 1936]

Lambert's (J O) Syrup—Dr J O Lambert Ltd Troy N Y Composition Essentially chloroform creosote volatile oils including anise, menthol and wintergreen with small amounts of epsom salt a little sugar and water. For coughs catarrh bronchitis asthma etc. Fraudulent therapeutic claims.—[N J 24631 April 1936]

Pheno Cosan—Whitney Payne Corp New York Composition Essentially a mercury compound a salicylate and tar in an emulsion of fatty acids and water. For chronic eczema wounds sores etc. Fraudulent therapeutic claims.—[A J 24632 April 1936]

Va Jel—Alpha Laboratory Inc Chicago Composition Essentially (12 per cent) gum tragacanth lactic acid glycerin traces of salicylic acid line sulfate and oil of citronella and water. Fraudulently represented as a cure for leukorrhea venereal diseases etc.—[N J 24631 April 1936]

Vaj Aseptic—Alpha Laboratory Inc Chicago Composition Essentially common salt (67.8 per cent) baking soda (23.14 per cent) and small proportions of thymol and menthol. For leukorrhea vaginal infections etc. Fraudulent representation.—[N J 24637 April 1936]

Correspondence

NEW DRUG CONTROL LEGISLATION NEEDED

To the Editor—The recent tragic deaths from elixir sulfamide have brought quite vividly to the public's attention the extreme danger of taking medicine without thorough experimental and clinical trial. The time seems ripe now for us to see that legislation is enacted and rigidly enforced against

1 Any drug or medicine sold to the public not acceptable to the Council on Pharmacy and Chemistry of the American Medical Association

2 Druggists and drug clerks prescribing "over the counter"
Any doctor or any one else prescribing drugs without knowledge of their property, actions, uses and contraindications should be condemned most heartily

Why drugs in the U S Pharmacopeia, the National Formulary and New and Nonofficial Remedies are not adequate is quite a mystery to me. One can surely find the desired product in one of these three sources if one would only take the necessary time to look it up

L L BEALL, M D, Cleveland, Miss

THE RECORD OF THE PATIENT'S HISTORY

To the Editor—A well taken history is complementary to a well done physical examination. A skilled historian needs no special history form and, indeed, may rise above the handicap of a grossly inadequate one. The student, however, is much influenced in his career by the form with which he is first familiarized. It is interesting to observe with what tenacity the student in his subsequent professional career sticks to habits ingrained as an undergraduate. I wish to suggest a minor revision of the standard medical history form.

The standard history form is broadly divided into History of the Present Illness, Personal Medical History, and Family History. The divisions H P I and P M H may be justified on the basis of expediency but lead to the development of a narrow perspective with reference to the development of disease processes. I believe that the history of the present illness and the personal medical history ought to be incorporated under a single heading. Beginning chronologically with infancy, then developing the medical history year by year, and episode by episode, and leading up to current aspects of the case, leads to a concept of the case, and a picture of development of disease processes as a continuous whole. The classification History of the Present Illness is largely inspired by the psychology of a layman patient who dates the onset of his illness from his first incapacity, disability or symptom, even though the physician does carry the history of the present illness back somewhat more remotely.

The scientific ideal in history taking should, however, be an attempt to trace an illness back to its hereditary or remote environmental origins. For the present, it must suffice to trace an illness back to childhood or infancy. In an acutely developing hemiplegia where does the present illness begin? With the onset of aberrations of consciousness? With the onset of paralysis? This is rather loose medical thinking. The present illness began many years previously with occasional breathlessness on effort, occasional headache, transitory paresthesias. Limiting the history of the present illness to a recent dramatic episode of a long drawn out illness represents layman psychology. An adolescent has hepatomegaly, ascites and a positive blood Wassermann reaction. Did not his present illness begin with the generalized rash in infancy, followed by bone lesions and iritis? Did not the patient with mitral stenosis begin his present illness with repeated upper respiratory infections and

anemia antedating by many years his first recent hemoptysis? In the adult with pulmonary tuberculosis did not his present illness begin in early childhood with recurrent febrile episodes, repeated respiratory episodes? In a case of acute cardiac infarction, the present illness did not develop recently with dramatic suddenness but rather with the slight dyspnea of many years ago, an occasional cough, occasional visual disturbances, and nocturia of some years past.

One might ask wherein lies any significant difference between the standard form subdivided into History of the Present Illness and Personal Medical History and a revised form embracing both of these under a single heading, Medical History (M H). Let me repeat again that in the case of the skilled historian this may be of no importance but for purposes of student training of considerable importance. A form helps establish a point of view and serves as a channel to direct the historian properly. That some change in the present form is necessary is evidenced by the following:

1 A review of a large number of hospital charts will show that the space allotted to the personal medical history averages about 5 to 10 per cent of the total history space.

2 The personal medical history usually consists of scant memoranda of the yes-no type under diseases and symptoms in contrast to the carefully written chronologically continuous narrative employed in the history of the present illness. Even granting that the greater length allotted the history of the present illness is for the development of symptoms which the patient demands be relieved, the scantiness of space and paucity of details in the average personal medical history a priori indicate an undue overemphasis on the history of the present illness. Facts essential to a clear conception of the evolution of a disease are slighted. If used subsequently for purposes of analysis, charts lack data indispensable in attempting to establish disease or symptom associations and etiologies.

The history pattern used by the psychiatrist could well serve as a model for a medical history. To the psychiatrist the apparently recent onset of mental symptoms is never anything but an episode in the development of psychologic processes whose roots run back to childhood and infancy. The psychiatrist thinks in terms of lifelong influences and a gradual unfolding of a personality. The identical point of view is applicable to somatic disease and should be imitated.

NATHANIEL HURWITZ, M D, Philadelphia

RESUSCITATION

To the Editor—Why is it that clinicians who nowadays generally recognize—at least in words—the dependence of the healing art on the fundamental sciences nevertheless often in practice neglect the plain teaching of those sciences and follow the suggestions of commercial advertisements and sales agents?

A case in point is the treatment of babies who, because of asphyxia or narcosis, fail to breathe spontaneously at birth. Anatomy teaches that the lungs of such babies are atelectatic, that is, collapsed. Physiology teaches that for respiration to be developed the lungs must first be at least partially inflated. Yet time after time for the past twenty-five years, under various names, a certain type of apparatus for artificial respiration that obviously violates the principles of both these sciences has been more or less successfully foisted on clinicians.

Such apparatus is designed and expressly advocated not only to blow air into the lungs, which, if effective and not too forcible would do good but also to suck air out of the lungs, and thus to keep the lungs collapsed or again render them atelectatic.

The first and most celebrated of these appliances was the pulmotor. Back in the years 1912 and 1913 the National Electric Light Association in order to obtain advice regarding electric shock, and the United States Bureau of Mines for

advice on resuscitation from asphyxiation by mine gases, requested the American Medical Association to recommend a commission for investigation of the subject of resuscitation. The commission that was appointed included Dr W B Cannon, chairman, Dr S J Meltzer, Dr Joseph Erlanger, Dr G W Crile and me. After extensive investigation of all known methods of artificial respiration, this commission made certain positive recommendations which have now for many years been generally adopted, but it expressly disapproved the pulmotor. And, as the disapproval was directed to the principle involved, it applies not only to the pulmotor but equally to all apparatus of its type, of which the latest is the E & J resuscitator, advocated in a recent article in THE JOURNAL (Martinez, D B. The Mechanical Resuscitation of the New-Born. A Report of 500 Cases, THE JOURNAL, Aug 14, 1937, p 489).

The main argument offered for all such appliances is a demonstration of their capacity alternately to inflate a rubber bag (simulating the lungs) and then to suck it flat. The reversal from blowing to sucking is automatically induced by the resistance of the bag when full or empty. Of this feature of such apparatus the commission reported:

Inflation and deflation of a bag is deceptive because the bag, unlike the air passages of the body, offers no resistance till full. As soon as the inspiratory blast meets an obstacle in the air passages however it is automatically cut off and turned into expiration and thus frequently no efficient inspirations are performed. The second harmful factor brought out by these experiments is the performance of expiration by suction. In normal respiration expiration is accomplished by a power that does not suck but drives out the air by the elasticity of the distended or compressed tissues aided sometimes by muscular contraction. [After detailing its various lines of investigation in laboratory and clinic the commission report said:] Upon the basis of these observations the conclusion was reached that the automatic mechanism of the pulmotor although an ingenious technical contrivance instead of assuring artificial respiration may interfere greatly with its efficiency, because the mechanism is liable to cut off inspiration prematurely.

In this verdict two other committees of investigation, one in 1918, the other in 1921, unanimously concurred (Report of the Commission on Resuscitation from Electric Shock, New York, National Electric Light Association, 1913. Report of the Committee on Resuscitation from Mine Gases, Technical Paper 77, U S Bureau of Mines, Washington, D C, 1914. Work of the Commission on Electric Shock, editorial, THE JOURNAL, Nov 1, 1913, p 1637. Proceedings and Resolutions of the Third Resuscitation Commission, *Science* 48 563 [Dec 6] 1918. Drinker, C K, and Redfield, A C. *J Indust Hyg* 6 109 [Aug] 1923. Final Report of the Commission on Resuscitation from Carbon Monoxide Asphyxia, *ibid* 6 125 [Aug] 1923). Evidence, which I have more recently obtained from obstetricians who have tested the E & J resuscitator on asphyxial or deeply narcotized babies, is to the effect that it frequently merely "clicks" from inspiration to expiration and back to inspiration in rapid succession without producing any movement of air in or out of the lungs. In some cases also autopsy has shown definite injury to the lungs.

General experience with the Drinker apparatus affords evidence which bears on this topic. It indicates that mechanical artificial respiration should be confined to a succession of inspirations and should not include forced expirations. When the body is enclosed in the Drinker apparatus, negative pressure induces inspiration in essentially the same way as does positive pressure over the face with apparatus of the pulmotor type. In the Drinker apparatus forced expirations by positive pressure are now generally omitted. And as negative pressure over the face acts similarly, it also should be omitted. Artificial respiration confined to inspirations, either with the Drinker or the pulmotor type of apparatus, if not too forcible, can do no harm but forced expiration with either type of apparatus can. If then, the principal objection to the pulmotor, the E & J resuscitator and similar devices is to be removed, negative pressure should be omitted. It should be added that, among the cases in which the E & J resuscitator has been used the latest to come to my knowledge is one in

which a child had to be removed for a time from a Drinker apparatus. During this time the E & J resuscitator was substituted but the child died.

What then should be recommended for the resuscitation of the new-born? First and foremost, obstetricians should be more conservative than is often the case now in administering narcotics shortly before delivery (Bundesen, H A, Dalton O A, Fishbein, W I, and Hamm, G E. Mortality of the New-Born in Chicago During 1935, with Special Reference to the Premature, THE JOURNAL, July 25, 1936, p 270. Henderson, J H. The Chicago City Wide Plan for the Care of Premature Infants, *ibid*, Aug 8, 1936, p 400). There is ample evidence that such drugs act far more on the baby than on the mother (Henderson, Yandell. Respiratory Stimulants and Their Use, THE JOURNAL, Feb 6, 1937, p 471). Doses that merely quiet her render the baby entirely apneic. Second, the passage of a soft catheter into the trachea of an apneic and flaccid baby is so simple an operation and insufflation by the Meltzer Flap technique (Flagg, P J. The Treatment of Postnatal Asphyxia, *Ann J Obst & Gynec* 21 537 [April] 1931) is generally so effective that there is little justification for any other procedure.

YANDELL HENDERSON, PH D, New Haven, Conn.

RECURRENT LARYNGEAL NERVE

To the Editor—I have always felt that in any formal terminology the primary purpose to be achieved was the clear and concise exchange of information and ideas. Unfortunately, anatomists have not always considered clinical convenience in setting up word lists, and clinicians, especially in America, seem to abhor formality in names.

At the present time the BNA, which is just being adopted in some clinical circles, is being either discarded or markedly altered in anatomic circles. The current suggested changes seem to follow nationalistic manners of thought, if not actual political boundary lines.

To me the statement in the editorial in THE JOURNAL, July 14, "Injury to the recurrent laryngeal nerve was recorded in 8.2 per cent of the cases. In no instance was it bilateral or permanent" is perfectly clear and anatomically accurate. I am a little surprised that Dr John F Quinlan of San Francisco finds ground for objection (Injury to the Recurrent Laryngeal Nerve, THE JOURNAL, September 4, p 809). Considering the matter of terminology, I quote for convenience from the comparative tabulation prepared by the committee of the American Association of Anatomists. The list was to be used by the association members in considering proposed changes. The numbers preceding the names are cross reference notations from the American committee's list. BNA refers to the Basle Nomenclature, BR to the present approved British list, and NK to the list of the Nomenklatur-Kommission. Nerve branches not concerned with the present discussion have been omitted.

AAA		BNA	
171	21	N	recurrens
171	25	N	laryngeus inferior
171	26		Ramus anterior
171	27		Ramus posterior
BR			
171	21	N	laryngeus recurrens
171	25		Rami pharyngei
171	26		Rami laryngei
NK			
171	21	N	recurrens
171	25	N	laryngeus caudalis
171	26		Ramus ventralis
171	27		Ramus dorsalis

Since the designations "right" and "left" are omitted in structures so named are normally bilateral. The right recurrent laryngeal nerve (to follow the language of the editorial and the BR) "recurs" about the right subclavian artery,

its point of origin. It is closely related or may be in contact with the innominate artery and, I would presume, could be sufficiently distributed by intrathoracic changes to cause vocal paralysis. Occasionally, owing to peculiarities in the embryonic transformations of the aortic arches, the right nerve does not recur but is distributed directly from the vagus nerve shortly below the superior laryngeal nerve. This condition occurs once in 500 cases in an English series, Adachi found one case in 516 Japanese cadavers. The incidence is much higher in the Negro. I see from one to three cases a year in our cadaveric material here in Philadelphia.

I regret that we cannot, for practical purposes, attain a common anatomic terminology, but this difficulty even with the present multiplicity of commissions is not as great as it has been in some epochs of anatomy.

OSCAR V. BATSON, M.D., Philadelphia

Professor of Anatomy, University of Pennsylvania Graduate School of Medicine

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

METRAZOL TREATMENT OF INSANITY

To the Editor—1. What is the nature of the metrazol treatment of mental disease? 2. Over how long a period does it extend? 3. What is the immediate effect on the patient? 4. What is the anticipated result of such a treatment? 5. What risk to the patient's health, mental or physical, is involved? 6. What degree of permanence can be expected from any resultant improvement?

M.D., Illinois

ANSWER—1. The metrazol treatment can be classed as a shock treatment and was first developed by Meduna of Budapest, who calls it a "convulsive therapy." The convulsions are induced by rapid intravenous injections of metrazol, which has a pharmacologic action similar to camphor and usually produces typical epileptiform seizures with doses of from 3 to 10 cc of the 10 per cent solution.

2. According to Meduna, the treatment is given twice a week and usually consists of from ten to twenty convulsions.

3. The immediate effect does not seem to differ from that produced by the ordinary epileptic seizure and is usually followed by transitory confusion and somnolence, after which marked improvement of the patient's mental status may supervene.

4. Meduna's reports compare favorably with those for the insulin shock treatment. Friedman of Buffalo has recently reported an improvement in thirty of forty cases treated by this method.

5. Sustained periods of confusion may occasionally follow the seizure, but there is usually no permanent deleterious effect on the patient's mental status. The most frequent complications are those attendant on ordinary seizures, namely, luxations, fractures or physical traumas and less frequently cardiovascular accidents.

6. The treatment is too new to give adequate information on the frequency of relapse.

ULTRAVIOLET RAYS FOR DESTROYING RINGWORM IN SHOES

To the Editor—It has been suggested that the official applicator of my cold quartz generator might serve in the sterilizing of the shoes of my patients suffering from the various fungous infections of the feet. Would this procedure be of any value in the prevention of recurrence?

M.D. Michigan

ANSWER—It is true that ultraviolet rays of the proper wavelengths are efficient in destroying bacteria and fungi. As to whether they would prevent recurrences of eczematoid ringworm of the feet from organisms remaining in the shoes is doubtful.

The applicator would have to be held long enough in every recess of the shoe and one would have to make certain that there is no fold anywhere in the lining or leather in order to expose the entire inside surface of the shoe. Even were

that possible, it is still doubtful that all the fungi would be killed. Scrapings have been made from the inside of shoes and it has been found that cultures of fungi can be made from some of the relatively deeper parts. It is well known, of course, that ultraviolet rays will penetrate only within a fraction of a millimeter of such materials as leather, and for this reason the organisms not on the surface of the inside of the shoe would still remain viable to start a fresh infection.

It would be more practical to use chemicals to accomplish the same end. The formaldehyde fumigation method is perhaps the most simple and yet efficient method for this purpose.

COLD PRESSOR TEST FOR STABILITY OF VASOMOTOR SYSTEM

To the Editor—The cold pressor test of Hines and Brown mentioned near the top of the second column, page 933, in *THE JOURNAL*, March 20, sounds most interesting. Can you give a brief description of the test?

GEORGE M. SHEAHAN, M.D., Quincy, Mass.

ANSWER—The cold pressor test, devised by Hines and Brown, was first reported in the *Proceedings of the Staff Meetings of the Mayo Clinic* 7:332 (June 8) 1932. Additional significant reports are:

Hines E. A., Jr. and Brown G. E. *Ann Int Med* 7:209 (Aug) 1933.
Am Heart J 11:1 (Jan) 1937.
Briggs J. F. and Oerting Harry. *Minnesota Med* 16:481 (July) 1933.

The technic of the cold pressor test is simple and the procedure is applicable to office use. The subject is permitted to rest in a recumbent position while several determinations of the arterial tension are made until a basal level is reached. The hand of the arm opposite to that on which the sphygmomanometer cuff is applied is then placed in ice water (4°C) well up the wrist. The arterial tension is determined at the end of thirty seconds and again at sixty seconds. The hand is then removed from the ice water and readings of the arterial tension are made every minute until the tension returns to its previous basal level. The maximal tension is usually observed thirty seconds after the exposure to cold, although it may be occasionally delayed. Some subjects find the immersion of the hand in ice water painful, but there is no relationship between such sensitivity and the response of the arterial tension. It is the degree of rise in the diastolic tension which is most significant although the changes in the systolic tension should be likewise observed. The two significant values are (1) the rise in the diastolic tension or "response" and (2) the level of the maximum diastolic tension observed.

The reaction of the arterial tension under these conditions is remarkably constant in any single individual, variation on repeated studies averages about 10 per cent. The types of response observed fall into five groups. 1. In normal persons the average rise of the diastolic tension is about 10 mm of mercury. The return to previous basal levels is prompt. 2. In hypertensive individuals with little or no arteriolar sclerosis the rise is from 25 to 40 mm. As these patients have higher than normal basal levels, the maximum diastolic readings are often very high. Despite this, no untoward effects of the test have been reported. The fall in the tension to previous levels is often somewhat delayed. 3. Hypertensive patients with varying degrees of arteriolar sclerosis give varying responses, from 10 to 30 mm rise is usual. 4. Arteriosclerotic patients without hypertensive arterial disease respond as do normal persons. 5. Hyperreactive individuals with normal basal levels of blood pressure react with an exaggerated rise in both the systolic and diastolic tensions. In these patients the diastolic usually rises from 20 to 30 mm. It is this last group that is perhaps the most interesting. These patients should be considered as being in a "prehypertensive state" or as having "potential hypertension." The transition from such potential hypertension to hypertensive arterial disease has been observed a number of times. The present concept of hypertensive arterial disease lays great stress on the intrinsic constitutional vulnerability of the patient as an important factor in the etiology. The cold pressor test reveals inherent instability of the vasomotor mechanism and thus indicates, often prior to the development of persistent hypertonia, the vulnerability of the individual. Ayman (*Arch Int Med* 53:792 [May] 1934) and others have shown that this hyperreactive type of response is much more frequent in children from families in which hypertension exists in one or both parents than in others. Dieckmann and Michel (*Arch Int Med* 55:420 [March] 1935) demonstrated those patients with preexistent renal and/or vascular injury gave exaggerated reactions early in pregnancy and that such reactions were a warning of the likelihood of later intoxication. These tests were made early in pregnancy, when the urinary examination gave normal results. The reactions in preeclamptic patients

were variable. In chronic nephritis in pregnancy the test caused violent upheavals of the arterial tension.

Many further clinical studies are necessary before all the significant implications of this test are thoroughly understood. It is especially necessary to follow for many years the younger hyperreactive patients so that the development of hypertensive arterial disease can be better studied in the early stages. In summary it may be concluded that this procedure offers much useful clinical information regarding the equilibratory mechanism of the circulation and that its application for the detection of prehypertensive individuals is a most fertile field.

ADDISON'S DISEASE

To the Editor—In Queries and Minor Notes in THE JOURNAL August 21 appeared an inquiry by M. D., Michigan concerning a test for and the treatment of Addison's disease. The answer is defective in two respects. First the response of the patient to a salt poor diet is mentioned as a diagnostic test. It is said that failure of this test does not exclude Addison's disease. The point should have been made that, as Wilder and his co-workers have stated (*Proc Staff Meet Mayo Clin* 11: 281 [April 29] 1936), it is important to regulate the potassium content of the diet if withdrawal of salt is used as a diagnostic test for Addison's disease. With a low intake of potassium (16 Gm or less) symptoms may be slow in developing or even indefinitely postponed while the restriction of sodium chloride may provoke serious relapse if the intake of potassium is high (4 Gm or more). Second the discussion of treatment fails even to mention the low potassium diet used first by the Mayo Clinic. Reports by Wilder and his associates Webber (*Maine M J* 27: 235 [Dec] 1936) and by me (to be published in the *Southern Medical Journal*) indicate that a low potassium diet plus administration of sodium salts may suffice to maintain patients in good condition.

ROBERT J. HOAGLAND, M.D., Fort Sam Houston,
San Antonio, Texas

COMMENT—With regard to the control of the potassium content of the diet in patients with Addison's disease, the point of the communication is well taken as far as it applies to the treatment of severe cases of Addison's disease. The work of Wilder and his associates points clearly in this direction, although their clinical studies were complicated by various controllable and uncontrollable factors, some of which are mentioned in their articles (R. M. Wilder and others, *Proc Staff Meet, Mayo Clin* 11: 273 [April 29] 1936, *Arch Int Med* 59: 367 [March] 1937). In the first of these articles, it is said that "attention will have to be paid to the potassium content of the diet prescribed for patients who have severe Addison's disease." The reply in THE JOURNAL assumed that the patient would be kept on a normal diet (including the usual potassium content) during the salt withdrawal test. No one knows what effect excessive administration of potassium may have on the outcome of this test in very mild or early cases of Addison's disease. It is obvious, however, that if the fear of provoking a serious relapse during the restriction of sodium chloride should lead physicians to reduce the potassium intake during the test, the diagnostic value of the test would be considerably diminished for that very reason.

In the discussion of the treatment, reference to the low potassium diet was omitted because the question referred to the treatment for "an early case of Addison's disease." Even a superficial familiarity with the labor of preparing and the unpleasantness of ingesting a diet low in potassium should make one hesitate to prescribe such a diet except when it is seriously indicated, namely, in severe cases of Addison's disease which fail to respond adequately to the usual therapeutic measures.

MASTURBATION IN WOMEN

To the Editor—What is the treatment of masturbation in a woman who is a graduate nurse? M.D., New York.

ANSWER—The treatment is different for the unmarried than for the married woman. It is especially difficult in a trained nurse, who has access to all sorts of erotic literature and who is often in intimate contact with young male patients, not to mention young male hospital interns.

In all women, whether married or not, it is important to remove all local genital irritations, such as intertriginous and eczematous conditions about the genitals. It is immaterial whether the local condition is the cause or consequence of the masturbation. Even if not the cause, it serves to keep up the habit and to attract the attention of the patient to her genitals, thus delaying a cure. Gymnastic exercises which might bring into play thigh friction, such as sliding down the banisters, sliding down a slippery pole, or bicycle and horseback riding, should be avoided. Operations on the genitals are of no value unless some distinct condition aside from the habit is present. Erotic literature and especially erotic movies and plays should be forbidden. The main aim in treatment is to replace the habit by an outdoor hobby, such as swimming, golfing or tennis, is of value. One must not talk in vague hints but put the issue

squarely before the patient and try to develop her will power and self control. Hard work, no matter of what nature, is of great value. Any inclination to be alone should be discouraged. These directions apply to single and to married women alike.

For single women it is absolutely essential to avoid statements as "nothing will cure your condition except marriage" or "the habit will leave you when you get married" and the like. In the first place the statement is probably false, and in the second place the young girl may take the hint and indulge in illicit coitus. It is more important to emphasize especially to a trained nurse who knows something about the anatomy and physiology of the female genitals, that masturbation develops those areas in the brain which are connected with the external genitals at the expense of those areas connected with the vagina. As a consequence, the ordinary act of coitus with its vaginal friction will not give as much pleasure or response as masturbation and so, if she marries later, the result might be frigidity. This explanation to a trained nurse may act as a deterrent to the habit. Long marriage engagements should be discouraged, for they keep up in both parties a state of sexual erethism which encourages masturbation. Especially harmful is spooning, "necking parties" and similar experiences. For a brief period the internal administration of bromides will help to tide over a severe urge. Tea, coffee and alcoholics must be avoided absolutely.

In married women the condition is often started or kept up by the practice of withdrawal in the husband. Here the husband interrupts the act of coitus before he reaches his own orgasm and almost necessarily before the wife has had hers. As a result the wife is left in an excited, unsatisfied condition and often either she or her husband titillates her clitoris to bring on the orgasm. This practice must be absolutely interdicted and the husband must be instructed about this as well as the wife and furthermore he should be instructed in the art of normal coitus. The avoidance of tea, coffee and alcoholics as well as the occasional use of bromides is the same as in single girls.

SIGNIFICANCE OF WASSERMANN REACTION

To the Editor—The statement on page 609 of THE JOURNAL August 21 that the Wassermann reaction is absolutely diagnostic of syphilis with the exception of yaws cannot go unchallenged. Should this statement be taken literally it will undoubtedly condemn many innocent people as being affected with syphilis. If you will refer to an article published by me on the diagnosis of syphilis in the April 1936 issue of *South Eastern Medicine* you will find the following: "It is not perfect. Yaws a tropical disease caused by a spirochete will give a positive test fever will at times give a positive test and when repeated after the fever is gone will yield a negative reaction. Constipation may give a positive test. Jaundice at times gives confusing reactions. Tuberculosis may give a positive reaction although it will usually give a stronger reaction with tuberculous antigen. This quotation referred to the Wassermann test and the article went into detail as to the efficiency and reliability of the Wassermann test at that time, and I have had no occasion to alter my opinion of it since." H. M. PURCELL, M.D., Phoenix, Arizona.

ANSWER—After consultation with several clinical and laboratory authorities on the diagnosis of syphilis, the following answer appears to represent the majority opinion of those best qualified to discuss this subject. Three types of false positive reactions must be distinguished: technical false positive reactions—those due to some error in the performance of the test which occur in every laboratory, no matter what the test used and which are not confirmed on testing a second specimen; biologic false positive reactions, caused by the presence in serum or spinal fluid of actual reagin in the absence of syphilitic infection and in which both the Wassermann and the flocculation test are persistently positive, and, finally, what may be termed the anomalous false positive reaction, in which only the Wassermann reaction is positive, the flocculation reaction is persistently negative, and the patient presents no clinical evidence of syphilis. Technical false positive reactions constitute the majority, and hence the reliability of the laboratory is the first factor that enters into the interpretation. The next most important factor is the sensitivity of the test, which depends not only on the type of test used but in some instances on a deliberately obtained increase in case of reactivity.

The general opinion is that there are only five diseases other than syphilis which may produce persistently false positive serologic tests in a high percentage, namely, yaws, leprosy, malaria, trypanosomiasis and relapsing fever. Positive tests are sometimes obtained in tuberculosis, malignant disease, fever, jaundice, pneumonia, Hodgkin's disease, malignant endocarditis, infectious mononucleosis and other conditions, but the interpretation may fail to take into account the possibility of technical false positives or the fact that the patient actually has a symptomless latent syphilis. Furthermore, the majority of the false positives are of the doubtful variety. It is

clear that the Wassermann and flocculation tests for syphilis are not absolutely diagnostic of syphilis, although with the exception of the five diseases previously mentioned they can usually be so considered when allowance is made for the technical factors mentioned

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UNRESOLVED? PNEUMONIA

To the Editor—A woman aged 51 always in good health until February 1 came down with grip followed by bronchopneumonia which behaved typically for two or three weeks. Since that time there have been occasional days when her temperature remains normal but usually it is between 99 and 101 F. Her sputum shows pneumococci and streptococci but no tubercle bacilli. X-ray examination of the chest shows a fairly large area of unresolved pneumonia in the lower left portion with possibly a little fluid below the axilla but none posteriorly. A smaller area in the lower right part of the chest is not resolved. A needle failed to locate fluid. There is a persistent racking cough with profuse thin yellowish sputum loaded with pus cells. Nothing that I have been able to do has changed the situation in the past month. Kindly let me know what one can do to hasten resolution in such a condition for nobody seems to think that there is much except general care that affords any hope of relief, and the patient as well as her physician is getting terribly tired of the whole situation. ROBERT W SHEARMAN MD Brooklyn

ANSWER—For the complete diagnosis of this case it is essential to determine the nature of what is termed "unresolved pneumonia." It is necessary to exclude an infected atelectasis or suppuration in a pulmonary lobule due to retention from productive inflammation in its bronchiolar wall. The possibility of a localized empyema draining through a bronchus should be excluded. Information concerning the bacterial etiology of the bronchopneumonia is lacking and may still be supplied by cultural study of the pus. If the "unresolved?" pneumonia is due to continued infection it may be relieved, depending on the cause, either by autogenous vaccines or by roentgen therapy.

Careful studies should be conducted to determine the anatomic nature of the lesion. This may require either roentgenography with iodized oil or bronchoscopy.

HISTAMINE TEST AND GASTRIC SECRETION

To the Editor—In THE JOURNAL April 24 in an article entitled Gastric Carcinoma and Peptic Ulcer Dr Crinston Holman gives a technique of stomach analysis by the use of histamine hydrochloride hypodermically. He did not give the interpretation of the readings of this test. Can this method be successfully used instead of the test meal analysis of the gastric contents in neurosis and peptic ulcers? If so what is normal and what is abnormal? An attempt has been made to use it at St Mary's Hospital but the readings have been quite high compared to those of the test meal analysis. Please give a statement as to its use in all cases of gastric analysis and also how to interpret the readings especially in normal persons.

JAMES A HILL MD Jefferson City Mo

ANSWER—This question is answered best by referring to the article by A L Bloomfield and W S Pollard entitled The Diagnostic Value of Studies of Gastric Secretion (THE JOURNAL, May 4, 1929, p 1508) and the review of the literature on histamine as a stimulus in gastric secretion by L M Gompertz and M G Vorhaus (J Lab & Clin Med 11 14 [Oct] 1925). In brief, the method can be used successfully instead of the other types of test meals in the analysis of the gastric contents in neurosis and peptic ulcers. The question as to what is "normal" may be answered in part by the following quotation from Bloomfield and Pollard: "In general, it may be said that most normal persons have a maximum ten minute secretory volume of not under 15 cc and not over 35 cc and a total acidity of not under 90 and not over 125. The highest acidity we have ever encountered was 150, the greatest ten minute secretory volume was 60 cc. The entire range as regards both acid and volume may, however, be encountered in persons without other evidence of gastric disease."

All these statements are important. In the first place, as Dr A J Carlson pointed out a number of years ago all known pathologic variations of gastric secretion are depressions. The normal stomach may secrete as highly acid gastric juice and apparently as large a quantity of gastric juice as is seen in disease. Disease depresses the secretion if it affects it at all. The second important point is that all variations from high grade secretion to complete (histamine) anacidity are encountered frequently in persons without other evidence of gastric or other disease.

The greatest advantage of the histamine test is that a histamine proved anacidity is almost surely true anacidity,

for histamine is the most potent known stimulus for gastric secretion. The most important thing to know clinically with regard to gastric secretion is whether or not the stomach is able to secrete acid. If it is able to secrete acid, the patient does not have pernicious anemia (Sturgis, C C, Isaacs, Raphael, Goldhamer, S M, Bethell, F H, and Farrar, G E. Blood: A Review of the Recent Literature, *Arch Int Med* 55 1001 [June] 1935) or posterolateral sclerosis of the spinal cord (Oliver, T H, and Wilkinson, J F. Achlorhydria, *Quart J Med* 2 431 [July] 1933), if the stomach is unable to secrete acid, the patient does not have a benign peptic ulcer (Palmer, W L. The Mechanism of Pain in Gastric and Duodenal Ulcers. I. Achlorhydria, *Arch Int Med* 38 603 [Nov] 1926), Fundamental Difficulties in the Treatment of Peptic Ulcer (THE JOURNAL, Nov 18, 1933, p 1604).

It is self evident that the old classification of "normal free acidity" in terms of clinical units, as from 20 to 40, of "hyperacidity" as above 40 and of "hypo-acidity" as below 20, is incorrect and should be discarded. The important and perhaps the only significant point is whether or not the stomach is able to secrete acid.

REINFECTION OR RELAPSE OF SYPHILIS

To the Editor—A patient contracted syphilis in January 1925 and three months after the disappearance of the chancre started treatment at which time the blood Wassermann reaction was 4 plus. Between January 1925 and 1928 the patient had thirty six doses of nearsphenamine 106 mercury injections and twenty four doses of bismuth subsalicylate in oil plus indeterminate amounts of iodine. In 1928 after these varied kinds of intermittent treatment the reaction of the patient's blood was constantly negative and the spinal fluid examination was negative once. He remained well until January 1937 at which time he started treatment for a hard indurated irregular ulcer of the scrotum the size of a quarter (24 mm) with inguinal adenopathy. The stained slides from the lesion showed a few spirochetes. The blood Wassermann and Kahn reactions were both 4 plus. Spinal fluid and darkfield examinations were omitted. The lesion healed quickly with nearsphenamine. 1 Was the lesion a recurrence of the original infection or a reinfection? 2 What procedures should have been done to determine whether this is a reinfection or a recurrence? 3 Are there any authenticated cases of reinfection with syphilis and if not is there any definite proof of immunity to the disease? 4 If this diagnosis cannot be definitely determined that is recurrence or a reinfection what would be the best plan of treatment? Should the patient be treated as having a seropositive primary lesion (provided cardiovascular and neurosyphilis are ruled out) or should he be treated as having a later type of lesion? 5 Should nearsphenamine be used?

H J BECK MD Lamar Colo

ANSWER—The evidence presented suggests that the patient had a reinfection. The period of twelve years between the "first" and the "second" infection favors a reinfection. It is rare to see a patient with a relapse and a positive darkfield examination twelve years after the chancre.

Stokes lists seventeen indisputable, eight probable and five possible criteria of reinfection. The case under discussion complies with seven of the eight points for the "probable" criteria of reinfection, namely, (1) indisputable first infection, (2) negative clinical and serologic examinations for more than one year, (3) second chancre at a different site from that of the original one, (4) no signs of activity of the first chancre, (5) positive darkfield examination on the second chancre, (6) an adjacent bubo and (7) a positive blood Wassermann reaction. The eighth criterion, that is, the appearance of "secondaries" twenty days or more after the appearance of the chancre, was not noted in the description.

There are no procedures which can now be done to prove that this was a reinfection. However, there are several factors which if elicited would make the argument for reinfection more potent. It is essential to locate and determine whether the partner, the suspected source of the second infection, has evidence of acute syphilis. Note whether the incubation period from the time of exposure to the appearance of the chancre was within the normal range. A patient suspected of having a reinfection may be allowed to go untreated to note whether he develops secondaries following the second chancre, this, of course, is not possible in the case under discussion at this time. The appearance of a bubo and a positive darkfield examination for *Spirochaeta pallida* on aspiration of the bubo are further evidence that the patient has a reinfection.

There are some authentic cases of reinfection, although most of the suspected cases are in reality examples of a recurrence or relapse. Definite proof of immunity to the disease is lacking although there is presumptive evidence that some persons do have a definite resistance to syphilis, which minimizes the severity of the course of the infection or produces spontaneous cure.

As far as treatment is concerned it actually makes little difference whether this is a case of reinfection or of recurrence, because the patient should be treated intensively as having

early syphilis. The use of the continuous system of treatment, employing arsphenamine or neoarsphenamine and a bismuth compound, is recommended for such a patient. He should receive a minimum of thirty injections of arsphenamine and fifty of a bismuth compound.

Neoarsphenamine is slightly more toxic and has a slightly lower therapeutic index than arsphenamine. Accordingly, it should be given in somewhat smaller doses but with more injections to the course. Eight injections of neoarsphenamine should constitute a course, with the dose ranging from 0.3 to 0.7 Gm, depending on the age, sex, weight and general status of the patient.

OCCLUSION OF DIGITAL ARTERIES

To the Editor—A printer aged 46, has been troubled for the past four years with a gradually increasing uncomfortable sensation of numbness and tingling and coldness in the finger tips. The sensation is blunted so that he is unable to operate the keyboard of a linotype, which requires an accurate sense of pressure. He has also noted a tired feeling in the calves of the legs without pain, after walking. General physical examination is rather negative. The past history is that of one of usual normal health. There is no diabetes. The blood Wassermann reaction is negative. The blood pressure examination reveals a systolic blood pressure of 100/110, with a diastolic pressure of 80. Blood count reveals 5,000,000 red blood cells and 6,000 white blood cells. Blood smear reveals nothing abnormal. X-ray examination revealed several ulcerated teeth and one devitalized tooth without ulceration. An injection intramuscularly of 0.0125 cc of mechoyl resulted in vasodilatation of the skin all over the body and of the arms and hands down to the proximal phalanges leaving the distal portions of both hands in the same color, which appeared blanched in comparison. I could not appreciate any change in temperature nor did the patient feel any warmer in the tips of the fingers after the injection as he did in other parts of the body. I am thinking of treatment with alternating suction and pressure. What about the possibility of an occupational cause? What about an allergic cause? What other lines of treatment should be considered? What about the practicability of a ganglionectomy?

M D Cleveland

ANSWER—The data presented suggest an organic arterial occlusion of the digital arteries and perhaps of the arteries of the lower extremities, although nothing has been said about the absence or diminution of the pulses of the foot and popliteal space. Sudden drop in skin temperature at certain levels or a difference of temperature between symmetrical areas of the lower extremities should be looked for. Focal infection originating in the teeth, tonsils and prostate must be eradicated. A twenty-four hour specimen of urine can be examined for lead and arsenic. In interpreting the results, the upper limits of normal lead excretion in Cleveland must be known, as this varies in different communities. Should the lead excretion be high, a cautious deleading with ammonium chloride and a change in occupation are advisable. Smoking, if practiced, should be absolutely prohibited. Sufficient water intake up to ten to twelve glasses of water with an addition of 10 Gm (150 grains) of sodium chloride in the form of tablets helps to increase the water content of the blood. If there is no evidence of arteriosclerosis by palpation or x-ray examination of the pedal arteries, a course of intravenous injections of triple typhoid vaccine may be started. The doses may be kept so low that chills and high temperatures are avoided. A course consists of from ten to twelve treatments.

If after such a conservative regimen there is no definite improvement, a sympathectomy can be considered. Whether or not this operation is going to be successful depends chiefly on the proper selection of the case, which requires considerable experience and should be left to the judgment of a surgeon familiar with this type of work. He will test the capacity of the vascular bed to dilate with physical or chemical vasodilators and will perform a complete sympathetic denervation by pre-ganglionic section.

Results of suction and pressure treatment in this type of case have not been definite.

VARICOCELE

To the Editor—What is the possibility and incidence of acute varicocele arising suddenly without preexisting signs or symptoms such as pain, red streaks and swelling? Kindly include etiologic factors, types and locations of acute varicoceles.

BERNARD L. ROBBINS M D Miami Beach Fla

ANSWER—Varicocele is a dilatation, elongation and tortuosity of the spermatic veins. It is a common condition in young men and is much more frequent on the left side than on the right. In all probability this is due to the fact that the left spermatic vein enters the left renal vein at a right angle, making venous return more difficult than on the right. Varicocele may be symptomless for a long time unless attention is directed toward the lesion. When that happens, a peculiar hypochondriac state develops and mental symptoms of varying degree may follow. Of course when the varicocele becomes inordinately large a distressing sense of weight, pressure in the loin,

in the groin and in the back is perfectly understandable. Red streaks and swelling, as mentioned, are not encountered in cases of varicocele unless a phlebitis of the spermatic veins is present, which is rare.

The actual cause of varicocele is the incompetence of the valve at the orifice of the left spermatic vein followed by reflux of blood from the vena cava. This is brought about by increased intra-abdominal pressure transmitted along the unvalved spermatic vein. There may be one or several anterior trunks and one posterior trunk, which anastomose freely with one another and constitute the pampiniform plexus. These trunks often have valves, but if the valve at the renal vein is incompetent they gradually become incompetent too.

There are two possible answers to the question raised by the inquiry: either there has existed a fully developed varicocele, which was asymptomatic and to which sudden attention has been called by an injury, or a sudden rise in venous pressure, following an unusual strain, has actually opened up a venous segment in the pampiniform plexus and has thus aggravated a preexisting, congenital defect. As no clinical data are supplied in this hypothetical case, any further statement would be of speculative nature.

CRAVING FOR CELERY

To the Editor—I am writing with regard to a patient who has a craving for celery. She can go about three days without eating it and then gets very nervous and feels that she must have celery. If she goes three or four days without eating any celery she must eat a whole bunch to be relieved of her symptoms. After eating the celery she is very calm. She says she could eat celery every day. She has tried various other vegetables and greens and has also taken medicine, but none have taken the place of celery. Her mother and grandmother were both morphine addicts. However, her mother acquired the habit after the patient was born. The habit was acquired by giving morphine for pain. Her mother was cured of the habit. I should like to know whether anything can be suggested that would be of benefit or give me light on this subject.

C J LARSEN, M D Stoneham, Mass

ANSWER—A patient with this particular craving has never been encountered by the writer, although of course other examples of unusual craving have been seen. Frequently they are of considerable significance. For instance, before the discovery of Whipple, Minot and Murphy regarding the significance of liver in pernicious anemia, physicians occasionally encountered patients with pernicious anemia who had a craving for liver. A craving for salt in patients with Addison's disease is frequently encountered, in which the administration of large amounts of salt has been found to be beneficial, and a craving for foods that supply vitamins, encountered in men who have been subsisting on a vitamin poor diet. Numerous other examples might be cited. There is no obvious substance that celery could provide that might otherwise be lacking. It would seem wise to respect the craving and allow as much celery to this patient as she would care to eat. Large amounts of celery would probably not do her any harm, and to withhold the food under the circumstances might be harmful.

ASCITES

To the Editor—Please give me the quickest and best treatment for ascites in a person 60 years of age. How can one determine whether it is of portal or nephritic origin? Will intravenous mercurial preparations do any good in an ascites of portal origin?

A R WANAMAKER M D Hamburg Iowa

ANSWER—Ascites is due to so many different conditions that one can give but a short summary of some of the more important causes in this reply. By the same token it is impossible to give any adequate suggestions as to therapy, because no data are submitted to furnish a clue as to the cause of the ascites in this patient. Portal obstruction is not a simple entity. Any condition interfering with the flow of blood in the portal circulation, of intrahepatic origin, as in the cirrhosis, or of extrahepatic origin from anything occluding the portal vein, as a thrombosis, or compressing it, as tumors or enlarged lymph nodes, may lead to the development of ascites. Chronic peritoneal irritation from chronic inflammation and neoplasms may also cause ascites. Congestive heart failure with engorgement and cirrhotic changes in the liver may be accompanied by ascites. This condition, however, may be primary or it may be a complication frequently a terminal event in one or another form of chronic nephritis or nephrosclerosis in the course of chronic hypertension.

Ascites is a rare symptom of acute nephritis and its consideration evidently does not enter here. The diagnosis of nephritis requires not alone urinalyses but a study of the blood chemistry and renal function. Relief of the ascites may be obtained by paracentesis of the abdomen under sterile precautions the needle entering in the midline about 3 or 4 cm. above the symphysis. A local anesthetic as 0.5 or 1 per cent

procaine hydrochloride, may be used with advantage. This procedure may be repeated with the return of ascites. The medical means of relief of ascites are, first, if the condition is cardiac, an attempt to improve cardiac action. The mercurial diuretics, of which salyrgan or mercupurin is an example, may be given intravenously or deep intramuscularly, in doses beginning with half an ampule, subsequently increased to a full ampule every few days. At the same time the patient should get 0.65 Gm of ammonium chloride three times daily. The response may be immediate, in a few hours, or it may not occur for several hours and continue for from two to even three days. Albuminuria is no contraindication to its use. The use of a mercurial diuretic may be continued indefinitely. Recently suppositories have been introduced which in some cases seem to produce considerable diuresis.

TREATMENT OF PRURITUS ANI

To the Editor—Have there been any recent developments in treatment of severe chronic pruritus ani? What are considered the best solutions for injection?

FRANK C. GREEN, M.D., Chillicothe, Ill.

ANSWER—In cases of severe chronic pruritus ani it is important to see that the rectum is normal, polyps, fissures, hemorrhoids and large skin tags should be removed. An area of dermatitis can be injected through multiple punctures with a fine hypodermic needle, punctures being half an inch apart and injecting below the dermis about 2 minims (0.12 cc) of absolute alcohol in each puncture. The area injected is then covered with zinc oxide paste and instructions are given the patient to avoid rubbing with bath towels, sponges, toilet paper and other irritating or traumatizing agents. The alcohol causes a numbness of the region for about three months and with suitable hygiene of the skin most patients are either cured or at least receive definite relief.

SULFANILAMIDE SOLUTIONS

To the Editor—Enclosed please find one of the clippings now on the front page of the daily press relative to deaths from a solution of sulfanilamide. I have on my desk a three ounce sample of solution of sulfanilamide with citra lactate dispensed by Donley Evans and Company, St. Louis. Do you have any information relative to this product?

M.D., St. Louis

ANSWER—None of the products of the Donley-Evans Company have been accepted by the Council on Pharmacy and Chemistry. The Council has not accepted any solution of sulfanilamide. There is no evidence available to indicate that any preparation of sulfanilamide is stable in solution form. In order for the Council to recognize a solution of sulfanilamide, the product must be stable and, at the same time, the solvent must be nontoxic in the doses given. Possibly a satisfactory solvent has been developed. However, there is no evidence to indicate that this is the case. Until such time as a product of this type is devised, physicians will do well to prescribe only accepted brands in powder and tablet form.

TOXICITY OF *di*-CHLORO *di*-FLUOROMETHANE (FREON)

To the Editor—Can you furnish me with information regarding the toxicity of Freon, the gas commonly used in air conditioning? I should like to know the symptoms of toxicity and the relative concentration of the gas necessary to produce symptoms. Are the effects of this gas cumulative?

ALBERT H. MANN, M.D., Texarkana, Ark., Texas

ANSWER—Freon is stated to be *di*-chloro-*di*-fluoromethane, K-12. This refrigerant is discussed in a publication based on hearings before the fire department of the city of New York and embracing materials prepared by "Freon" manufacturers on one side and E. T. Williams and John Kenlon on the other. This report is controversial but does contain an extensive bibliography. *Di*-chloro-*di*-fluoromethane, although compounded from highly toxic substances, is in itself substantially nontoxic. It is substantially free from irritant properties and apparently acts only as an asphyxiant. When it replaces oxygen in the atmosphere, it leads to asphyxiation solely by displacing oxygen. Apparently a high concentration, such as 20 per cent of the total atmosphere, may be required in order to bring about noteworthy injury under ordinary circumstances.

This compound may readily decompose, particularly when affected by heat, leading to the presence of new compounds of much higher toxicity. It has been stated that "freon" on decomposition yields hydrogen chloride, hydrogen fluoride, chlorine and phosgene. Of these substances phosgene is perhaps the most important as a toxic agent, if in appreciable quantities in a respired atmosphere, though the toxicity of fluorine is not to be discounted. So far as known, no cumulative effects are

produced by the prolonged inhalation of this gas. However, the technical data available, based on animal experimentation, are somewhat lacking in extended observations. All in all, at this time it appears possible to rate this gas as one of the least hazardous of the substances used in mechanical refrigeration in absence of conditions (such as fire) that may lead to decomposition. The perfect refrigerant has not been discovered.

MYOSITIS OSSIFICANS

To the Editor—Please advise me whether there has been any new treatment for progressive myositis ossificans. I have a patient with it and she does not seem to respond to any treatment. M.D., Louisiana

ANSWER—No effective therapy for progressive myositis ossificans is known. Tutunjan and Kegerreis (Myositis Ossificans Progressiva, *J. Bone & Joint Surg.* 19 503 [April] 1937) have recently reviewed the literature and reported one case in detail. They have suggested the administration of beryllium carbonate, which is known to reduce the inorganic phosphorus content of the serum. Beginning with doses of 3 Gm a day and later increasing this to 6 Gm daily, they gave their patient a total of 200 Gm without noting any untoward symptoms but with no definite evidence of improvement or decalcification of either the bones or the abnormal deposits. The authors express the opinion that more favorable results might be obtained if the subjects are available prior to the full development of the osseous system and if the treatment could be carried out over a much longer period.

ANCIENT SCHOOL OF MEDICINE

To the Editor—I am seeking information about a school of physicians known as "methodists" which existed about the middle of the fifteenth century and which discarded observation and held to the pure deductions of reason and logic.

J. W. YANCA, M.D., Brenham, Texas

ANSWER—No reference has been found to any school of physicians known as "methodists" in the fifteenth century. Perhaps the Greek school which flourished in the second century A.D. is meant. References to this school are:

Lund, F. B. Greek Medicine (Clio Medica) New York, Paul B. Hoeber, Inc. 1936, p. 72 ff.
Allbutt, T. C. Greek Medicine in Rome, London, 1921, p. 192 ff.
Meyer, Steiner, T. Das medizinische System der Methodiker, Jena, 1916 (Jenaer medizinisch-historische Beiträge, No. 78).
Edelstein, L. Methodiker in Pauly Wissowa, Real-Encyclopädie der classischen Altertumswissenschaft, Supplementband VI, Stuttgart, 1935, cols. 358-373 (philosophical background of the school).
Sigerist, H. E. The Great Doctors, New York, Norton & Co., 1933, pp. 56-67.

SUBCUTANEOUS OR INTRAMUSCULAR INSULIN

To the Editor—Recently in two articles on the treatment of schizophrenia by insulin shock, I have read that the insulin injections should be given intramuscularly. My teaching has been that insulin should not be given intramuscularly and I find statements to the latter effect in recent textbooks. In one recent textbook is the statement that "if insulin is injected into the muscles necrosis occurs and scar tissue forms." Can you explain this apparent discrepancy?

E. J. KELLEHER, M.D., Kenilworth, Ill.

ANSWER—In diabetic clinics everywhere the invariable rule, so far as we know, is to advise the subcutaneous administration of insulin as the method of choice. Hence there is probably little available information as to the local effect of present-day insulin when given intramuscularly. It must be remembered that the insulin now distributed by pharmaceutical houses is a purer preparation than that in the early days following its discovery.

It is possible that those who have had considerable experience in the treatment of schizophrenia with insulin shock may have made further observations on the point in question, but no published statement has come to our attention. It may be noted that in a recent report from one clinic in this country (*J. A. M. A.*, 109 1246 [Oct. 16] 1937) insulin for the shock treatment was given subcutaneously.

VIOSTEROL (A R P I PROCESS)

To the Editor—Will you be good enough to throw some light on the viosterol (A R P I Process) in oil which was covered in an advertisement that I read in your issue of September 18. I am not quite clear as to whether or not this viosterol is made by a new process and if so how it effects its results on the human body. Please omit name.

M.D., Illinois

ANSWER—This product was fully discussed in the report of acceptance by the Council on Pharmacy and Chemistry published in *THE JOURNAL*, October 2, page 1126. The report is based on a large mass of toxicologic, pharmacologic and clinical material submitted to the Council with the viosterol (A R P I Process).

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL October 30 page 1475

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination Feb 14 16 May 9 11 (limited to a few centers) June 20 22 and Sept 12 14 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written examination for Group B applicants* will be held in various cities throughout the country in April *Oral examination for Group A and B applicants* will be held at San Francisco in June Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written examinations and review of case histories for Group B candidates* will be held in various cities of the United States and Canada Feb 5 *Applications must be filed at least sixty days prior to date of examination* *General oral clinical and pathological examinations for all candidates (Groups A and B)* will be conducted in San Francisco June 13 14 *Application for admission to Group A examinations must be on file before April 1* Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY San Francisco June 13 *All applications and case reports in duplicate must be filed at least sixty days before the date of examination* Sec Dr John Green 3720 Washington Blvd St Louis Mo

AMERICAN BOARD OF ORTHOPEDIC SURGERY Los Angeles Jan 14 15 Sec Dr Fremont A Chandler 6 N Michigan Ave Chicago

AMERICAN BOARD OF PATHOLOGY New Orleans Dec 24 Sec Dr F W Hartman Henry Ford Hospital Detroit Mich

AMERICAN BOARD OF PEDIATRICS Los Angeles Nov 7 Boston Nov 14 and New Orleans Nov 30 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec 29 30 Sec Dr Walter Freeman 1028 Connecticut Ave NW Washington D C

AMERICAN BOARD OF RADIOLOGY San Francisco June 10 12 Sec Dr Byrl R Kirklin 102 110 Second Ave SW Rochester Minn

Washington July Report

Mr Dave S Cohn, secretary, Department of Licenses, reports the written examination held in Seattle, July 12-14, 1937. The examination covered 7 subjects and included 70 questions. A grade of not less than 60 per cent in any subject was required to pass. Forty-five candidates were examined, all of whom passed. Twenty-six physicians were licensed by reciprocity and 6 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Arkansas School of Medicine	(1935)		68.5
College of Medical Evangelists	(1937)	86	86.7
Stanford University School of Medicine	(1936)		82.7
University of Colorado School of Medicine	(1936)	79.8	84.1
Georgetown University School of Medicine	(1936)		84.1
Northwestern University Medical School	(1937)	80 82.5 82.7 84.1 * 84.1 84.7 88*	86.5
School of Medicine of the Division of the Biological Sciences	(1936)	84.8 * (1937)	83.4
Indiana University School of Medicine	(1936)	77.5	79.7
University of Kansas School of Medicine	(1929)	76	(1936) 83.2
University of Michigan Medical School	(1933)		83.7
Washington University School of Medicine	(1936)		86.5
Creighton University School of Medicine	(1936)		79.1
University of Nebraska College of Medicine	(1922)		81.8
Columbia University College of Physicians and Surgeons	(1936)		81.7
New York Homeopathic Medical College and Flower Hospital	(1931)		80.2
Western Reserve University School of Medicine	(1934)		80.5
University of Oregon Medical School	(1935)		86.2
Jefferson Medical College of Philadelphia	(1935)		86.2
University of Pennsylvania School of Medicine	(1936)		80.1
Woman's Medical College of Pennsylvania	(1915)		85
Marquette University School of Medicine	(1937)		82.8
McGill University Faculty of Medicine	(1935)		85.2
Regia Università degli Studi di Perugia Facoltà di Medicina e Chirurgia	(1935)		88.1†
Universität Zürich Medizinische Fakultät	(1936)		83.5†

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Northwestern University Medical School	(1935)		Minnesota
Colorado (1936)* California	(1932)*		
State University of Iowa College of Medicine	(1933)		Iowa
Tulane University of Louisiana School of Medicine	(1931)		Texas
Johns Hopkins University School of Medicine	(1935)		Maryland
University of Minnesota Medical School	(1933)		Minnesota

St Louis University School of Medicine	(1936)	Missouri
Washington University School of Medicine	(1933)	Missouri
University of Nebraska College of Medicine	(1935)	Nebraska
University of Oregon Medical School	(1935)	Oregon
Louisiana (1936) California (1935) Utah (1936)	(1934)	Texas
University of Pennsylvania School of Medicine	(1933)	Wisconsin
University of Texas School of Medicine	(1930)	Texas
University of Virginia Department of Medicine	(1936)	Virginia
University of Wisconsin Medical School	(1936)	Oregon

School	LICENSED BY ENDORSEMENT	Year Grad	Year Endorsement
College of Medical Evangelists	(1936)	(1933)	3) N M E
Washington University School of Medicine		(1930)	N M E
University of Wisconsin Medical School		(1936)*	N M E

* License has not been issued

† Verification of graduation in process

Delaware July Report

Dr Joseph S McDaniel, secretary, Medical Council of Delaware, reports the written examination held at Dover, July 13 15, 1937. The examination covered 10 subjects and included 100 questions. A grade of 75 per cent in each subject was required to pass. Sixteen candidates were examined 14 of whom passed and 2 failed. Five physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine	(1933)		83
Yale University School of Medicine	(1934)	84	89.5
University of Illinois College of Medicine	(1936)		86.7
University of Maryland School of Medicine and College of Physicians and Surgeons	(1936)		80.7
Ohio State University College of Medicine	(1936)		81.1
Hahnemann Medical College and Hospital of Philadelphia	(1936)	82.9	84 85.3 88.1
Jefferson Medical College of Philadelphia	(1936)	81.5	84.3
Temple University School of Medicine	(1936)		83
University of Pennsylvania School of Medicine	(1936)		89.7

School	FAILED	Year Grad
Harvard University Medical School	(1933)	
Temple University School of Medicine	(1936)	

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Yale University School of Medicine	(1930)		Connecticut
Indiana University School of Medicine	(1918)		Indiana
Jefferson Medical College of Philadelphia	(1930)		Pennsylvania
University of Pennsylvania School of Medicine	(1931)		Pennsylvania
University of Virginia Department of Medicine	(1937)		Dist Columbia

California Reciprocity and Endorsement Report

Dr Charles B Pinkham, secretary, California State Board of Medical Examiners, reports sixty-three physicians licensed by reciprocity and 16 physicians licensed by endorsement from July 9 through Oct 2, 1937. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine	(1936)		Colorado
Georgetown University School of Medicine	(1929)		Michigan
Emory University School of Medicine	(1936)		Georgia
Chicago College of Medicine and Surgery	(1911)		Montana
Loyola University School of Medicine	(1927)		Illinois
Northwestern University Medical School	(1931)		Illinois
(1935) Montana			
Rush Medical College	(1904)		Iowa
(1905) Hawaii (1907) Illinois			
University of Illinois College of Medicine	(1937)	(1934)	Illinois
Indiana University School of Medicine	(1926)	(1934)	Indiana
Medical College of Indiana	(1907)		Dakota
State University of Iowa College of Medicine	(1924)		
(1929) (1932) Iowa (1933) Washington			
University of Kansas School of Medicine	(1932)	(1936) 2	Kansas
Tulane University of Louisiana School of Medicine	(1928)		Arizona
(1935) Colorado (1926) (1936) Louisiana			
Baltimore Medical College	(1910)		Massachusetts
Johns Hopkins University School of Medicine	(1927)		New York
(1936) Maryland			
Harvard University Medical School	(1933)		Kansas
Detroit College of Medicine	(1911)		Michigan
University of Michigan Medical School	(1926)		Missouri
(1929) Michigan New York			
University of Minnesota Medical School	(1931)	(1936)	Minnesota
St Louis University School of Medicine	(1932)	(1934)	Missouri
Washington University School of Medicine	(1933) 2		
University of Nebraska College of Medicine	(1918)		
(1919) (1923) (1927) 2 (1929) (1936) Nebraska			
University and Bellevue Hospital Medical College	(1903)		Utah
University of Rochester School of Medicine	(1934)		New York
Ohio State University College of Medicine	(1907)		Ohio
Toledo Medical College	(1935)		Ohio
University of Oregon Medical School	(1930)		Oregon
Hahnemann Medical College and Hospital of Philadelphia	(1936)		Pennsylvania
Jefferson Medical College of Philadelphia	(1926) 1	(1935)	Pennsylvania
University of Tennessee College of Medicine	(1935)		Tennessee

Vanderbilt University School of Medicine	(1935) Tennessee
Baylor University College of Medicine	(1933),
(1934) (1935) Texas	
Queen's University Faculty of Medicine	(1919) Colorado
Ludwig Maximilians Universität Medizinische Fakultät,	
München	(1920) Illinois
National University of Athens School of Medicine	(1904) Massachusetts
<hr/>	
School	LICENSED BY ENDORSEMENT
College of Medical Evangelists	Year Endorsement
University of California Medical School	Grad of
Yale University School of Medicine	(1935) N B M Ex
University of Illinois College of Medicine	(1932) U S Navy
College of Physicians and Surgeons of Baltimore	(1932) N B M Ex
Johns Hopkins University School of Medicine	(1917) U S Navy
Harvard University Medical School	(1915) U S Navy
University of Nebraska College of Medicine	(1931) U S P H S
Columbia College College of Physicians and Surgeons	(1926) N B M Ex
University and Bellevue Hospital Medical College	(1895) U S P H S
Western Reserve University School of Medicine	(1914) U S Navy
University of Oregon Medical School	(1929) N B M Ex
University of Pennsylvania School of Medicine (1922)	(1930) U S Navy
Vanderbilt University School of Medicine	(1930) N B M Ex
	(1916) U S Navy

Book Notices

Physical Diagnosis The Art and Technique of History Taking and Physical Examination of the Patient In Health and in Disease By Don C Sutton M.D. Associate Professor of Medicine Northwestern University School of Medicine Chicago Cloth Price \$5 Pp 495 with 306 illustrations St Louis C V Mosby Company 1937

As a basic textbook for the academic teaching of physical diagnosis, this one has many excellent features and few faults. It is mainly practical, in parts concise, and easy to read. Illustrations are for the most part well chosen, especially the few charts and the roentgenograms. The first portion of the book is made up of an excellent section on the art of medicine and the history of physical diagnostic methods. The author is to be commended on his interesting presentation of this material. The chapter on the taking of a history is rather brief, particularly the portion dealing with gastro-intestinal diseases. Many statements in this chapter are dogmatic, yet some could not be accepted by every internist and surgeon. The section on the heart covers 150 pages and, with the introductory chapter, comprises half of the entire book. It is obvious that the author is particularly interested in cardiology. The thirteen pages dealing with cross-sectional anatomy of the heart do not seem essential in a book of this type. While the chapter seems too detailed for inclusion in so general a work, even its length does not detract from its value. The chapter dealing with examination of the thorax is well written. The illustrations are clear and well placed. The section on abdominal examination is adequate but that on neurologic investigation is rather sketchy. It is to be regretted that the author failed to stress the importance of rectal examination. It seems that it should not be performed only "when indicated" but rather that it should be considered a routine measure. On the whole, however, there are few faults in this well planned book on a difficult but fundamental subject.

Personality and the Cultural Pattern By James S Plant M.D. Director Essex County Juvenile Clinic Cloth Price \$2.50 Pp 432 New York Commonwealth Fund London Oxford University Press 1937

Dr Plant has had a number of years' experience doing child guidance work, in fact, he was one of the earliest child guidance experts in this country. His clinic in Essex County, N. J., is a splendid example of work that can be done, yet Dr Plant professes to be thoroughly disappointed in the psychiatric approach although he does not say so directly. He emphasizes that the individualization of the case and the so-called case history method, looking into the dynamics of the individual, whether due to heredity or to environment, are in themselves inadequate. What one needs if one is to make an adequate study of any case is the careful analysis of, first of all, the personality as it is seen and, second the influence of cultural and sociological processes on the individual. The earliest part of this volume deals with the general thesis emphasizing that the psychiatric approach, so long as it deals only with the individual without relation to its environment, is more or less sterile. The way that this aspect has been phrased does not give it any tinge of newness, for mental hygienists have for years stressed the fact that other approaches beyond the mere interview with the patient and the reconstruction of the patient's

past life through conventional methods are necessary and that one must study the complete cultural pattern. But Plant goes beyond this. He formulates a systematized way of thinking about the whole problem. He points out, for instance, that truancy is not a single experience, that it does not arise from a single cause but that there are a number of rather vague causes which the child himself perhaps does not recognize in which the truancy has its inception. Various cultural interrelations are thoroughly worked out. He discusses certain angles of personality study which in themselves are not new but which have an enlightening and stimulating effect when studied from his point of view. The last part of the book emphasizes the picture presented today by the various sociological agencies: the family, the social agency, the church, the school, the court and industry. At these Plant looks in a rather critical light, perhaps not so much novel as thoroughly recrystallizing and clarifying. While one does not agree with many of his statements, since the book is highly theoretical and not based on the cold scientific method, which perhaps is not really applicable here, opinions on the subject are open to diversification, yet one cannot deny that the volume is stimulating. One would scarcely consider a modern mental hygienist, child guidance psychiatrist or any one else interested in the relationship of the social problem of mental health properly equipped without some acquaintance with this work.

Gastroscopy The Endoscopic Study of Gastric Pathology By Dr Rudolf Schindler Associate Clinical Professor of Medicine University of Chicago With a preface by Dr Walter Lincoln Palmer Associate Professor of Medicine University of Chicago Cloth Price \$7.50 Pp 343 with 185 illustrations Chicago University of Chicago Press 1937

This new volume in English should be welcomed by those members of the American profession who are interested in gastroscopy. It is not a translation of the author's earlier *Lehrbuch und Atlas der Gastroscopie*, published in 1923, but is completely new. The book contains twenty-one chapters, the first eight of which are devoted to historical, anatomic, technical and physiologic fundamentals. Chapter 10, on gastritis, is of special interest. The author maintains that 50 per cent of all patients examined are found to have gastritis, and he regards it as the commonest of all gastric lesions. His simple classification of the chronic nonspecific forms of gastritis into superficial, atrophic and hypertrophic commends itself. To this group is added postoperative gastritis. Chapters 14, 18 and 20, on the postoperative stomach, the relationship between gastroscopy and surgery and the relationship between gastroscopy and the x-rays, are of interest to the surgeon and the roentgenologist.

Schindler minimizes the danger of gastroscopy to the patient when the flexible instrument, fitted with a rubber finger tip, is used. He feels that gastroscopic examination should be a routine method of the gastro-enterologist just as cystoscopy should be a routine method of the urologist. The amount of air to be blown into the stomach is one of the most delicate problems of gastroscopic technique, in his experience, and he properly stresses the difficulties of orientation. The production of an image that corresponds more nearly in size with reality in all parts of the stomach is still an unsolved optical problem. He frankly admits that ulcers of the pylorus and duodenum cannot be seen gastroscopically and that the lesser curvature of the antrum often remains hidden from view. And yet it is at these sites that gross benign and malignant lesions, usually readily demonstrated by the competent roentgenologist, are almost exclusively situated. He lists a variety of twelve conditions in which he feels that gastroscopy is regularly indicated, including duodenal and gastric ulcer and gastric carcinoma. His justification for advising gastroscopic examination of a patient with duodenal ulcer, especially if an operation is under consideration, is that there may be an associated gastric ulcer or gastritis present. "In the differentiation of benign and malignant gastric ulcer, gastroscopy is, in my experience, second only to microscopic examination." But his description of a lesion under the caption "carcinomatous ulcer" is really that of a good sized ulcerating carcinoma.

The author's observations on gastro-intestinal hemorrhage are pertinent in large measure. He feels that this condition is an important indication for endoscopic examination, for often the x-ray examination does not reveal the cause, which may

be an actual ulcer demonstrable only by the gastroscope, or a severe hemorrhagic gastritis, hemorrhagic erosion or a benign tumor. Postoperative hemorrhages are often due to a gastritis. Such examination should be made after the bleeding has stopped. The gastroscopic appearance and differential diagnosis of all types of ulceration of the gastric mucous membrane are summarized in chapter 13. The gastroscopic determination of the exact size or depth of an ulcer is found to be difficult. Gastroscopically it is usually easy to follow exactly the process of ulcer healing, and the author has observed that the crater is often found to persist even after the niche has disappeared on x-ray examination.

Schindler states that in gastritis all parts of the stomach are affected, but all gastroscopists agree that the body is much more frequently involved than is the antrum. "The concept of a special antrum gastritis arose apparently from the fact that the specimens obtained by surgical resection consist chiefly of the antral portion of the stomach." The author feels that the most common reason for failure in gastric surgery is the development of a "terrible and incurable chronic gastritis." This does not appear to occur in well adapted and rhythmically contracting stomas. He has observed that the surgeon, as a rule, does not appreciate the importance of gastroscopy as does the internist who has seen the interior of the stomach through a gastroscope.

In the diagnosis of carcinoma or in the determination of its operability the author now takes the position that combined x-ray and gastroscopic examination is superior to the exploratory laparotomy and obviates the surgical risk and mortality inseparable from such exploration, that gastroscopy decides the question of the nature of a pyloric obstruction, whether benign or malignant, even better than does examination during the operation and thus predetermines whether a gastro-enterostomy may suffice or whether the more hazardous resection is indicated. Gastrophotography is rightly condemned with faint praise. The x-ray diagnosis of gastritis seems to be extremely untrustworthy, in Schindler's opinion. There, however, appears to be one x-ray picture almost diagnostic of the extremely severe forms of hypertrophic, nodular gastritis, the so-called granulation relief picture.

It is quite obvious that the average clinician and surgeon will not be in entire accord with all the views expressed by the author. Certainly those with a large experience in this field would challenge a number of the conclusions at which he has arrived, at the same time readily conceding his frank sincerity, his masterly skill and his enthusiasm. Nevertheless, this new volume is a classic of its kind and will be one of the greatest incentives to have gastroscopy assume its rightful place in the diagnostic armamentarium of all progressive medical clinics and hospitals in this country.

Le bacille de type bovin dans la tuberculose humaine. *Revue de la documentation actuelle*. Par le Docteur Marcel Gervois. Paper. Pp 314. Lille. Imp. L. Danel. 1937.

This book is a thorough presentation of tuberculosis in the human body produced by the bovine type of tubercle bacillus. The author has included a chapter on the avian bacillus and presents a few cases of disease in man produced by the avian type of bacillus, which have been reported from time to time. This number is so small and the data leading to the diagnosis are so incomplete as to lead one to believe that the avian type of tubercle bacillus produces clinical disease in man only with great rarity. The author has assembled the literature from various parts of the world and has compiled numerous tables. For example, from 221 articles over the past thirty-five years he has collected 17,045 bacteriologic examinations to determine the type of tubercle bacilli. He has also assembled information on 260 observations on pulmonary tuberculosis produced by the bovine type of bacillus. A great deal of emphasis is placed on the transmission of the bovine bacillus to man and the pathogenesis of the disease. Such factors as the age of the patient and the incidence of the disease among rural and city dwellers are discussed. The last section of the book is devoted to methods of prevention. Reference is made to 473 articles and it is gratifying to see in this bibliography the names of so many from the United States who have taken an important part in eradicating tuberculosis from cattle.

Visual Perception. By M. D. Vernon. M. A. Cloth. Price \$4.00. Pp 247 with 19 illustrations. Cambridge University Press, New York. Macmillan Company, 1937.

Most psychology textbooks contain a selection from the experimental work on visual perception, but no book covers the entire field in a comprehensive and detailed manner except this one by Miss Vernon. Her aim has been to make the treatment thorough but to avoid any preconceived theoretical bias in the interpretation of the facts.

The material in the book falls under four main headings. First there is an account of the phenomenal development of the perceptual process up to the final stage of meaning and the reaction tendencies. The second section deals with the relation of the perceptual content to certain of the affective states and attitudes. The third section treats of the objective structure of the perceptual field. In the fourth section there is a description of the genetic development in childhood of the perceptual content. Finally she turns to the classification of individual differences.

Miss Vernon admits that her account of the different features of the perceptual process and its relation to meaning and to various secondary sensory and imaginal processes may resemble the old atomistic approach. However, she had been cautious in her acceptance of the reality of these constituents, pointing out that the preconceived ideas and theoretical bias both of experimenter and of subjects may have vitiated the results to an unknown degree.

She shows a preference for the functional approach, as opposed to the "structuralist" position pointing out how the latter involves a certain rigidity in the analysis and classification of the types of awareness.

In her treatment of the work of the gestalt school of psychology she has avoided any exhaustive criticism of *gestalt theory* and has limited her account to some of the experimental results which seem empirically valuable.

The final sections of the book delve into the newer and debatable field of individual differences. It is pointed out that the gestalt psychologist has been neglectful in this field, to which his theories only partially apply. On the other hand, Miss Vernon is no champion of the strict typological classification. She believes that any classification of types (whether perceptual, imaginal, synesthetic types or temperament and personality types) should be thought of as a "mere shorthand expression" for types of differences, which will serve our purposes if rightly used.

One of the most interesting and valuable sections in the book is this last part, dealing as it does with types of reactions of individuals to life situations. Miss Vernon has shown an ability to correlate the work of different investigators, noting points of correspondence, ignoring minor differences, so as to introduce a semblance of clarity into a confused and contradictory field. She has criticized the Rorschach classification of personality types as being purely empirical, without rational basis (in a theoretical sense) and as having a low statistical reliability. But she claims that as a quantitative view of the whole personality the scheme has undoubted value. It is more detailed, comprehensive and flexible than other classifications. The introversion and extroversion classification resembles Jung's introvert-extravert typology. Also it bears a similarity to Kretschmer's cycloid-schizoid and Jaensch's integrate-disintegrate. Since it contains as an essential element a classification according to color and form responses, it is in agreement with Oeser's color and form dominant classification. Miss Vernon admits that the apperception type is of most interest to her, since it summarizes and goes beyond the previous work on the subjective-objective, synthetic-analytic and active-passive perceptual types.

The physician and more especially the psychiatrist may find the section on synesthetic types useful as an aid in the interpretation of various abnormal phenomena. The concept of synesthesia is a familiar one, since it is well known that certain people have associations between different types of images. That is, the stimulus presented to one sense channel seems to call up imagery in another mode as readily as that of its own. Although temperamental instability and strong emotionalism are

not necessarily present, still the phenomena may be associated with adolescence, emotional stress, nervous fatigue, illness, and so on.

In the section on imaginal types, reference to the eidetic image is made, and this type of imagery is clearly differentiated from the primary memory image and the after-image. A conclusion is drawn that the fixed type of eideticism is more common among younger children, when it is a normal phenomenon. But the labile type of eideticism increases in the period of puberty and may be associated with emotional disorders.

Miss Vernon states her general conclusion thus: "It is characteristic of these schemata [types of directing tendency, perceptual patterns, and so on] that they provide an immediate and automatic connection between the experiencing individual and the supposed nature of his environment. Thus the observer is normally unaware of the stages in the development of the percept, of the differentiation of form, the assimilation of past experience, the understanding of meaning, he experiences the percept not as a phenomenon arising within his own consciousness but as something really existing in the external environment."

Thus the schemata not only provide facilities for the most rapid and efficient development of the percept but also for its reference to and correlation with the essential aspects of the external environment.

"So the naive individual believes that his percepts are completely determined by the external stimulus conditions and are referable in their entirety to some real object or system of objects which exist outside himself. But we have endeavored to show that the phenomenal percept is determined entirely by the established functional schemata—for instance, feelings of familiarity, attitudes, affective tendencies, and so on, and indirectly we become aware of them by studying the nature of the perceptual content."

But of their actual structure, the method by which they are established and the manner in which their individual impulsive tendencies are coordinated, we know nothing. We have attempted to dig the ground, to clear away the debris, and perhaps prepare the foundations, as yet we cannot foretell the nature of the edifice to be built thereon."

Tweedy's Practical Obstetrics Revised and largely rewritten by Bethel Solomons MD FRCP FCOG Gynaecologist Dr Steevens Hospital Dublin and Ninian McIntire Falkner MD ScD FRCP FRCOG Visiting Gynaecologist Royal City of Dublin Hospital. Seventh edition. Cloth Price \$8.75 Pp 773 with 295 illustrations. New York & London Oxford University Press 1937.

The present edition contains many changes. Some recommendations made in the last edition have been revoked. For example the authors no longer recommend the cervical cesarean section for placenta praevia but now prefer the classic operation. They do not look with as much favor on twilight sleep as they formerly did. Solomons is now definitely opposed to the use of chloroform during labor. He believes that ether is the method of choice in cases of toxemia. Many obstetricians, especially American ones, are of the firm belief that the anesthetic of choice in all cases of toxemia is local anesthesia. The authors continue to advocate gastric lavage and colon flushings, but these measures have almost entirely been given up in this country. Submammary "transfusion" (infusion) is described and illustrated but it is best to avoid injecting large quantities of fluids under the breasts not only because of the immediate pain that results but also because of the discomfort that often arises when the flow of milk is established. The inner surface of the thighs is a better place for injecting fluids subcutaneously. The authors advocate episiotomy only in cases of rigid perineum. The Solomons modification of the De Lee head stethoscope is identical with that proposed by Hillis when the head stethoscope was first devised. Most of the illustrations in the book show women in labor with the pubic and vulvar hairs untouched. In this country almost all women have these hairs shaved off or clipped with scissors during labor. These minor criticisms however, should not detract from the excellence of the book. It is one of the best textbooks on obstetrics in the English language. The seventh edition will undoubtedly prove to be even more popular and valuable than the previous editions because Solomons has presented in this book the results of his huge experience gathered over a period of many years.

A Textbook of Applied Biochemistry for Pharmacists and Pharmaceutical Students By Frank Wokes BSc PhC F.I.C. Member of the Staff of the Pharmacological Laboratories College of the Pharmaceutical Society of Great Britain. Cloth Price \$5 Pp 522 with 79 illustrations. Baltimore William Wood & Company 1937.

This volume was written expressly for the pharmacist and pharmaceutical student in England. The recent high standard of educational requirements in pharmacy have created a field for books on biochemistry which meet the specific needs of this field. Accordingly, this book is concerned with the various applications of biochemistry in pharmacy and allied branches of public health. The material is concisely presented. It covers the usual list of subjects given in a syllabus of biochemistry, besides more specifically the subjects which should be of special interest to the pharmaceutical student and pharmaceutical chemist. In the opening chapter on the biochemical importance of water the author discusses not only the information of general biochemical interest but also methods of removing water from drugs, variations in moisture content of various drugs, and so on. The succeeding chapters are terse but comprehensive discussions of hydrogen ion concentration, surface phenomena and colloids, spectroscopy and ultraviolet radiation (photochemistry and photosynthesis). In the chapter on bacteria the author discusses sterilization methods and germicides after considering information of general bacteriologic interest. The chapters on hormones and vitamins are well done and contain essential information, in brief, that is of interest to the pharmaceutical student and chemist. At the end of the book is a well selected bibliography.

An Investigation into Questions of Social Hygiene in the Counties of Västerbotten and Norrbotten Sweden Conducted with the Support of the Royal Medical Board in 1929-1931. Published in Swedish in 1934. English partly revised edition. Paper. Various pagination with illustrations. Lund Håkan Ohlsson 1937.

The conditions affecting health in the two farthest north provinces of Sweden were subjected to detailed examination, with special emphasis on diet, housing and school environment. It was discovered that significant vitamin deficiencies could be easily remedied by a somewhat more extensive use and better preparation of certain native berries. The population of the district in 1931 was 407,096. More attention is given to public and private health organizations than to the work of physicians, and it would appear that these various societies and public institutions and nursing services are depended on for a large share of the health care. One general impression seems quite clear, that in spite of the subsidized physicians and salaried medical officers nearly all the problems of rural medical service that trouble the United States are still more or less serious problems in these districts. State grants in aid of district medical services are given only to districts with a population of about 3,000, and the context would indicate that one physician is expected to serve a population of this size.

Allergy Its Practical Application By J. A. Rudolph MD Associate Clinician in Charge to the Department of Allergy Mt Sinai Hospital Cleveland Ohio. Expressly Prepared for Physicians and Students of Medicine. Containing Practical Points Necessary for the Care of Patients with Asthma Hay Fever Urticaria Eczema and Other Allergic Conditions. Cloth Price \$3 Pp 224 Philadelphia Dorrance & Company 1937.

This small book is intended to furnish students and practitioners of medicine practical aid in the care of patients suffering from asthma, hay fever and other allergic conditions. In this aim the author has succeeded to a considerable extent. The chapter on house dust and that relating to allergy of the skin are good. The chapter on immunology is brief and there is an almost complete absence of directions regarding dosages used in hyposensitization. The necessity of correlating clinical observations with skin tests is well emphasized. The book unfortunately has some serious defects. The author tends to be dogmatic in several instances, e.g., on page 66 "delayed reactions are of no importance." Other errors appear, e.g., on page 76 Scheppegrell is given credit for first attempting a pollen survey (1917), whereas Blackley's work preceded this some fifty years. On page 81, tree pollen is not mentioned at all as a cause of hay fever in the Central states. On page 136 the use of calcium in asthma is opposed as not all beneficial, yet in 1936 the author wrote an article favoring the use of calcium.

A serious shortcoming is the complete absence of references to recent literature. No article published after 1934 is mentioned and therefore the book is so out of date that it omits entirely such subjects as the valuable oral use of 1:100 solution of epinephrine in asthma.

Mikromethodik. Quantitative Bestimmung der Harn, Blut und Organbestandteile in kleinen Mengen für klinische und experimentelle Zwecke. Von Ludwig Pincussen. Sixth edition. Boards. Price 5 marks. Pp. 193 with 31 illustrations. Leipzig & Vienna: Franz Deuticke, 1937.

This edition attests the popularity of Pincussen's work. It varies from the preceding only in the revision of several methods and the addition of a few of the newer methods. The book begins with a clear, simple statement of the principles involved in measuring and weighing, colorimetric methods, and nephelometry. Then follow sections on the quantitative determination of the common inorganic and organic constituents of urine, blood, tissue and feces. These are followed by a section on blood examination by gas analysis and a few pages on the determination of hydrogen ion concentration by means of indicators. A subject index follows. The methods are clearly stated under the headings of principle, reagents, procedure, calculation and example. Some of the methods vary from those commonly used in routine clinical analysis. The book is therefore a welcome addition to the library of those who read German, as a supplementary manual on alternate methods for special routine analyses on small quantities of material as well as for research procedures.

The Common Neuroses. Their Treatment by Psychotherapy. An Introduction to Psychological Treatment for Students and Practitioners. By T. A. Ross, M.D., F.R.C.P. Second edition. Cloth. Price \$4. Pp. 236. Baltimore: William Wood & Company, 1937.

To the practitioner of medicine this book is commended. It provides an insight into the etiology and therapy of the psychoneuroses contained in no other book. The author does not limit himself to any single approach in his attempt to understand and treat the psychoneuroses. "Most books now in circulation are pledged to some particular method, and there has been little recognition of the possibility that different methods of treatment may be used to advantage in different types of illness and for different individual patients." His critical analysis of Freud is heartening. He utilizes Freudian mechanisms in his therapy and acknowledges Freud's contributions to the bodies of philosophic and psychologic knowledge, but he feels, in common with many others, that Freud's contribution is not basically a therapeutic one. The book should prove of inestimable value to the general practitioner, who sees, and will continue to see, the great bulk of functional and nervous disorders.

Quelques vérités premières (ou soi-disant telles) en pathologie cardio-vasculaire. Par E. Donzelot, professeur agrégé de pathologie médicale à la Faculté de médecine de Paris. Collection publiée sous la direction de MM. L. Ombrédanne et N. Flessinger. Boards. Price 24 francs. Pp. 82. Paris: Masson & Cie, 1937.

This little brochure contains a series of short generalizations designed to state definite facts on disorders of the heart and blood vessels. The first portion deals with cardiac arrhythmias, angina pectoris, endocarditis, myocarditis, myocardial infarction, congenital cardiopathies and cardiac insufficiency. The second portion is concerned with vascular abnormalities such as arterial and venous abnormalities and hypertension. Myocardial infarction is dealt with as follows: "The clinical syndrome is extremely variable but can be grouped into two types, one in which anginal pain predominates and the other characterized by cardiac insufficiency. The anginal form is characterized by four essential signs: pain, fall of arterial blood pressure, pericardial friction rub and fever. Pain opens the scene brutally, is agonizing and persists for hours or even days; it is also literally insupportable. Fever appears typically on the second day, is constant, and oscillates between 38 and 38.5 degrees C. It is accompanied by leukocytosis." The booklet should be of interest to medical teachers of cardiovascular disease, who may find in the short, pithy statements which are regarded by the author as "primary truths," texts around which amplifications of the subject may be developed.

Measurements of Ultraviolet Radiation and Illumination in American Cities During the Years 1931 to 1933. By James E. Ives, Senior Physicist, and W. A. Gill, Assistant Chemical Engineer, Office of Industrial Hygiene and Sanitation, U. S. Public Health Service. Prepared by direct order of the Surgeon General, U. S. Treasury Department, Public Health Service. Public Health Bulletin No. 233. Paper. Price 10 cents. Pp. 35 with 11 illustrations. Washington, D. C.: Supt. of Doc. Government Printing Office, 1937.

In the work reported in this bulletin, horizontal surfaces were used for registering measurements. A Macbeth illuminometer, provided illumination figures, while ultraviolet measurements were made with a meter developed by Rentschler. The authors believe that the two main contributions of their study are first, its general nature (measurements were taken in fourteen cities of widespread geographic distribution: New Orleans, Los Angeles, San Francisco, St. Louis, Washington, Baltimore, Philadelphia, Pittsburgh, New York, Cleveland, Chicago, Detroit, Boston and Buffalo) and, second, the determination of the ratio of the antirachitic ultraviolet shorter than 313 millimicrons to the illumination.

Maladies des femmes enceintes. III. Affections de la peau. Par Henri Vignes, professeur agrégé à la Faculté de médecine de Paris. Avec la collaboration de F. Hanouin et G. Vial. Paper. Price 28 francs. Pp. 404 with 4 illustrations. Paris: Masson & Cie, 1937.

Maladies des femmes enceintes. IV. Affections des muqueuses génitales. Par Henri Vignes, professeur agrégé à la Faculté de médecine de Paris. Paper. Price 24 francs. Pp. 125. Paris: Masson & Cie, 1937.

These two volumes are the third and fourth in the series of books prepared by Vignes on the illnesses that may occur during pregnancy. In volume III the author takes up diseases of the skin and in its seventeen chapters he discusses the entire field of dermatology that may be associated with gestation. Volume IV deals with the affections of the mucous membranes of the vagina and cervix. As was emphasized in the review of the first two volumes (*THE JOURNAL*, May 2, 1936, p. 1596) the books are encyclopedic in character. The author has thoroughly reviewed the world literature on the subjects he discusses and he summarizes it in excellent fashion. Large sections of each book are devoted to therapy, hence these books should prove to be of great practical value as well as indispensable sources of reference.

Diseases of the Nose and Throat. A Textbook for Students and Practitioners. By Sir St. Clair Thomson, M.D., F.R.C.P., F.R.C.S., Consulting Surgeon for Diseases of the Throat, King's College Hospital, London, and V. E. Negus, M.S., F.R.C.S., Surgeon for Diseases of the Throat and Ear, King's College Hospital, London. Fourth edition. Cloth. Price \$14. Pp. 976 with 415 illustrations. New York & London: D. Appleton Century Company Incorporated, 1937.

Thomson's book has always been a popular one, having passed through three editions since its first publication in 1911. The present edition discloses V. E. Negus in the role of co-editor and contributor, he having rewritten the subject of peroral endoscopy into a new and separate chapter. Several discarded procedures, such as the Kilian operation and intubation of the larynx, have been curtailed in the text to make way for more generally accepted procedures. Experience in the use of the bronchoscope has led to more detailed description of pulmonary and esophageal conditions than is found in the earlier editions. On the whole, the book follows its predecessors rather closely as to the material and its arrangement, offering nothing that is revolutionary but keeping up with recent trends. Like many textbooks that come to us from our English confreres, it is particularly replete with therapeutic minutiae and is therefore the sort of book one likes to refer to frequently when cases fail to respond to a favored routine. To those who are acquainted with the earlier editions there is little more to be said. To those who have not had that pleasure, it may be safely recommended as a valuable addition to a practical library.

Assessment of Risks in Life Assurance Practice. By Jehan, Jr., F. F. setal, M.D., L.R.C.P., L.R.C.S. Paper. Pp. 18. Bombay: The Author, 1937.

This is the kind of pamphlet that many life insurance companies prepare for distribution to newly appointed examiners. The value may be doubted considering such statements as "The mortality from all diseases on the whole is said to be greatest among clerks." "Family history of tuberculosis is the most widespread cause of extra rating."

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts Compensability of Tuberculosis Contracted by Nurse—The claimant was employed from June 1930 to November 1934 as a nurse by the Murdale Sanitarium of Milwaukee County, Wis., a sanatorium for tuberculous patients, her work requiring her to come in close personal contact with the patients. In October 1934 she contracted a cold, tuberculosis developed and she applied for compensation under the workmen's compensation act. The examiner for the commission found that the nurse had not contracted tuberculosis in consequence of performing services growing out of and incidental to her employment and dismissed her application for compensation. The industrial commission set aside the examiner's findings and awarded compensation. The county of Milwaukee instituted proceedings to set aside the award of the industrial commission and from an adverse judgment in the trial court the county appealed to the Supreme Court of Wisconsin.

The county contended, among other things, that there was no evidence to sustain the finding of the commission. But, said the court, one physician testified that the nurse probably contracted tuberculosis while working at the sanatorium. The testimony of another medical witness, while not so definite, was open to the inference that the nurse did not have active tuberculosis at the time she entered the employ of the county. A third medical witness testified that a long and continued exposure to tubercle bacilli is a very important factor in reactivating an old lesion. There was, the court said, sufficient competent evidence to sustain a finding either that the nurse did not have tuberculosis or had an arrested case of it at the time of her employment by the county and that the work at the sanatorium either reactivated the disease or constituted its original cause. In either event, the nurse would be entitled to compensation. The award of compensation was affirmed—*Milwaukee County v Industrial Commission (Wis.)*, 272 N W 46.

Optometry Practice Acts Writ of Prohibition to Restrain Revocation of License for Untrue Statement in Advertising—The California optometry practice act authorizes the state board of optometry to revoke the license of a licensee for "the advertising of optical business or treatment or advice in which untruthful, improbable or impossible statements are made." The board initiated proceedings against the plaintiff to revoke his license, alleging that his advertisement in a local newspaper contained untruthful and improbable statements in that he offered for sale complete glasses containing single vision lenses and including frames and examination for \$7.50 and that he refused to sell to persons answering the advertisement the advertised glasses for the price stated. Prior to the hearing, the plaintiff instituted proceedings for a writ of prohibition, in the superior court, Los Angeles County, to stay the proceedings. A judgment obtained by the plaintiff was affirmed by the district court of appeal, second district, division 2, California (60 P (2d) 196), and the case was transferred to the Supreme Court of California for consideration as to the propriety of the issuance of the writ of prohibition.

The office of the writ of prohibition, said the Supreme Court, is limited by the constitution to the restraint of a threatened exercise of the judicial power in excess of jurisdiction. It does not lie to an officer or board exercising purely ministerial functions. The optometry act provides for a state board of examiners in optometry having state-wide jurisdiction over the practice of optometry. Such a board in the opinion of the court, actually engages in enforcing administrative determinations and does not exercise a judicial function. Agencies engaged in making administrative determinations, unlike courts have the power and the facilities to investigate and initiate action and, more or less informally, find the facts which under the law justify a course of action. They cannot and do not declare the law but perform the sole duty of ascertainment. Under this theory neither a writ of prohibition nor a writ of certiorari may be utilized to review the determinations of the

board. Furthermore, the court was of the opinion that the petitioner was not entitled to any relief on the showing made. He was accused of making untruthful statements in his advertisements. No evidence was taken inasmuch as the present proceeding was instituted before the time set for the hearing. We can appreciate, the court said, that under certain testimony it might be proved that the advertisement was not an untruthful statement, whereas, under other circumstances, it would be demonstrated to be untruthful and intentionally drawn to mislead. Certainly, the court said, untruthful advertising should be held to constitute an untruthful statement. Under such circumstances, the board should be permitted to proceed with the hearing. Accordingly, the judgment for the petitioner was reversed—*Whitten v California State Board of Optometry (Calif.)*, 65 P (2d) 1296.

Evidence Admissibility of Paraffin Mold Used in Gunpowder Test—The defendant, Westwood, was convicted of murder and appealed to the Supreme Court of Pennsylvania. He contended, among other things, that the trial court erred in admitting in evidence a paraffin mold of his hand and the testimony of expert witnesses that certain black specks on the mold constituted residues of gunpowder.

Shortly after the homicide, an assistant county detective made a "paraffin test" of the right hand of the defendant. Hot paraffin was placed next to the skin. Cotton was placed on that and then another coat of paraffin added. The paraffin was then lifted and later subjected by two chemists to the "diphenylamine test" or "lungee reaction." This was described as "a reaction primarily for nitrates and certain other oxidized substances." Gunpowder was said to be rich in nitrates. One of the chemists testified that a microscopic examination had revealed the presence of small black specks on the mold and that applying one or more drops of the "lungee reagent" to these specks "an intense blue color with comet tail formations was immediately apparent." This witness further testified that he had applied the reagent to gunpowder and an identical reaction had resulted. Another chemist, in answer to a hypothetical question, testified that the specks on the mold were residues of gunpowder. An expert witness for the defendant, also a chemist, testified that he had found, as a result of experimentation, that the following substances would give a "blue reaction" when the "diphenylamine test" was applied: ordinary soot, sodium perborate tooth powder, Pebecco toothpaste, cigar ashes, cigaret ashes and different kinds of matches. In his opinion, the "paraffin test" to detect the presence of gunpowder was not infallible. The Supreme Court of Pennsylvania, however, held that the mold and the expert testimony with respect to it were admissible in evidence. The judgment of conviction was affirmed—*Commonwealth v Westwood (Pa.)*, 188 A 304.

Malpractice Shortening of Leg After Fracture—The plaintiff as a result of an automobile accident sustained, among other injuries, a compound comminuted oblique fracture of his right femur about 2½ inches above the knee. He was removed to a hospital and there attended by the defendants. The physicians made a temporary reduction of the fracture and applied immobilizing agents. Five days later an operation was performed and a Lane bone plate, fastened with five one-half inch screws to the bone, was used to keep the fragments in apposition. After the operation the leg was encased in a board splint, and a Buck's extension was applied. An infection subsequently developed. Some of the screws that held the Lane plate gave way, causing the plate to become loose and permitting the fragments of the femur to overlap. As a result, the plaintiff's right leg was about 3 inches shorter than his left. He instituted a suit against the defendants for malpractice, claiming damages in the amount of \$40,000. The jury returned a verdict for the physicians but on motion of the plaintiff the trial court set aside this verdict and granted a new trial on the ground that erroneous instructions had been given the jury. The physicians thereupon appealed to the Supreme Court of Missouri, division No 2.

The instructions that were given the jury, erroneously in the opinion of the trial court, told the jury that nonexpert witnesses could testify concerning external appearances and manifest conditions observable by every one but that in the present case

the question was one of medical and surgical skill to be determined by the opinions of the medical experts and that the jury should not consider the opinions of laymen with respect to the matter. The contention seemed to be that this instruction unduly singled out for comment the opinion testimony of the expert witnesses, thereby usurping the functions of the jury. With this contention the Supreme Court disagreed. The present case, the court said, was tried on the theory that the issue of negligence revolved around the degree of care and skill ordinarily possessed and exercised by physicians and surgeons in good standing in the same or similar communities in the treatment of similar injuries. Whether or not the fracture board that caused pain in the patient's hip should have been removed to relieve the pain within a few days after the performance of the admittedly successful surgical operation, at the possible sacrifice of the successful results theretofore secured and the risk of further complications, was a matter to be determined from the testimony of witnesses possessing the necessary qualifications required through study, training and experience, and not from the testimony of the ordinary layman. So also with respect to the patient's contention that a fall from a bedpan to the mattress ten or twelve days after the operation loosened the Lane bone plate and refractured the femur. While, continued the court, malpractice cases exist wherein expert testimony is not indispensable to the establishment of negligence, the present case was not such a case. Proper instructions, therefore, with respect to the weight to be accorded the testimony of experts were justified.

Juries should not be permitted to say that the method of treating an injury of the nature here involved was negligent despite the fact that the evidence showed that the uniformly adopted practice of the most skillful surgeons had been followed. The mere fact that injury follows negligence, the court pointed out, does not necessarily create liability. The burden rested on the plaintiff to prove by substantial evidence that the physicians in the present case were negligent as charged and to prove the necessary causal connection between such negligence and the injury. If the evidence merely tended to prove that the injury might have resulted from several causes for some but not all of which the physicians were liable, the necessary causal connection remained in the realm of conjecture and speculation. All that the evidence disclosed with reference to the shortening of the patient's leg was that it might have resulted from one or more of several causes. In the opinion of the Supreme Court, the verdict of the jury for the physicians was a correct one and the trial court should have entered judgment on it. The cause was therefore remanded with directions to the trial court to reinstate the verdict of the jury for the physicians and to enter judgment thereon.—*Pedigo v Roseberry et al (Mo)*, 102 S IV (2d) 600

Privileged Communications. Testimony of Patient Constitutes a Waiver of Privilege.—The defendant insurance company promised to pay certain benefits to the plaintiff in event he became totally and permanently disabled if such disability was not due to a progressive, incurable ailment with which he was afflicted prior to the issuance of the insurance policy. The plaintiff became blind and sued the insurance company on the latter's refusal to pay the promised benefits. From a judgment in favor of the plaintiff, the company appealed to the court of appeals of Ohio, Licking County.

At the trial, the plaintiff claimed that "his eyes went bad" following the "flu" four years after the issuance of the policy. He voluntarily testified as to the nature of his disability. On cross-examination he admitted that he had consulted certain physicians about his eyes and stated that they examined his eyes and fitted him with glasses. The trial court refused, on the theory that a privileged communication was involved, to permit the defendant insurance company to prove by the testimony of these same physicians that the plaintiff's disability was the result of a disease, retinitis pigmentosa, that existed prior to the issuance of the policy. They would have testified that they discovered the disease when they examined the plaintiff's eyes. The insurance company contended that this testimony should have been admitted because the plaintiff had waived the privilege when he voluntarily testified relative to the consultation with these physicians concerning his eyes. In *Ausdenmoore*

et al, Ex'rs v Holzback, 89 Ohio St 381, 106 N E 41, and the court of appeals, it was held that a privileged communication may arise not only by word of mouth but by exhibiting the body or any part thereof to a physician for his opinion, examination or diagnosis, and that such privilege can be waived by either the express consent of the patient or his voluntary testimony as to the things and matters communicated to his physician. In the present case, therefore, the information communicated by the plaintiff to the physicians when he exhibited his eyes to them for examination constituted a privileged communication. This communication might have remained privileged, but when the plaintiff voluntarily testified, in his own behalf, "they examined me for the purpose of fitting me with glasses," he waived his privilege. In the opinion of the court of appeals, the trial court erred in rejecting the proffered testimony. The judgment of the trial court was therefore reversed and the case remanded.—*Metropolitan Life Ins Co v McKim (Ohio)*, 6 N E (2d) 9

Eugenic Sterilization. Fertility Despite Ligation of Vasa Deferentia.—Bastardy proceedings were instituted against the defendant, charging him with being the father of the relatrix's child. At the first trial a verdict of guilty was set aside by the court and a new trial granted. At the second trial the defendant was convicted of bastardy. The defendant's motion for a new trial on the ground of newly discovered evidence was denied and he appealed to the appellate court of Illinois, third district.

At the second trial the testimony that a physician gave at the first trial was permitted to be read. According to this testimony the physician, years prior to the alleged relationship between the defendant and the relatrix, had "sterilized" the defendant, at which time "both vasa were divided by the ligatures and separated." This witness stated that he had never known this kind of an operation to fail to accomplish its purpose. A medical witness for the relatrix, however, testified that ligation of both vasa deferentia would not necessarily prevent a man from begetting a child, that a simple tying off of a vas deferens would obstruct that duct for the time being but that the duct would reestablish itself after the absorption of the ligature. At the time of his motion for a new trial following his conviction, the defendant presented an affidavit of the physician who had operated on him to the effect that he had not only doubly ligated each vas deferens of the defendant but in addition had removed a section, approximately three-eighths inch in length, from each duct. An affidavit of another physician was also presented in which the affiant declared that the operation as described by the operating physician in his affidavit would, to a reasonable degree of medical certainty, produce sterilization. The defendant claimed that he was entitled to a new trial because of this "newly discovered" evidence.

The appellate court held, however, that the trial court had not erred in refusing to grant the defendant a new trial on the ground of newly discovered evidence because the defendant had not satisfied the court that, as is required by the law of Illinois, the evidence could not have been produced at the trial by the use of reasonable diligence. The court was of the further opinion that the jury was warranted in finding from the evidence presented at the second trial that the defendant was the father of the child. Accordingly, the appellate court affirmed the judgment of conviction.—*People ex rel Oemke v Schuring (Ill)*, 6 N E (2d) 217

Society Proceedings

COMING MEETINGS

American Society of Tropical Medicine	New Orleans	Nov. 30	Dec. 3
Dr. N. Paul Hudson	Dept. of Bacteriology	Ohio State Univ.	
Columbus, Ohio	Secretary		
Society of American Bacteriologists	Washington, D. C.	Dec. 27-30	
Dr. I. L. Baldwin	College of Agriculture	University of Wisconsin	
Madison	Wis. Secretary		
Society of Surgeons of New Jersey	Trenton	November 20	Dr. Walter
B. Mount	21 Plymouth Street	Montclair	Secretary
Southern Medical Association	New Orleans	Nov. 30-Dec. 3	Mr. C. F.
Loranz Empire Bldg.	Birmingham	Ala.	Secretary
Southern Surgical Association	Birmingham	Ala.	Dec. 7-9
Ochsner	1430 Tulane Ave.	New Orleans	Secretary
Western Surgical Association	Indianapolis	Dec. 3-4	Dr. Albert H.
Montgomery	122 South Michigan Blvd.	Chicago	Secretary

Current Medical Literature

AMERICAN

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American J Digest Dis & Nutrition, Fort Wayne, Ind

4 413-486 (Sept.) 1937

- Protamine Insulin Compared to Regular Insulin in Treatment of Diabetes Mellitus A Levitt and C F Castiglia Buffalo—p 413
Effect of Nicotine on Intestinal Peristalsis W C Alvarez Rochester Minn—p 417
The Management of Strangulated Hemorrhoids E L Cartwright Fort Wayne Ind—p 425
Collapsible Indwelling Nasogastric Tube E E Woldman Cleveland—p 428
Incidence and Permanence of Unexplained Gastric Anacidity in Rhesus Monkey After Histamine and Mecholyl with Hematologic Studies J G Schnedorf and A C Ivy, Chicago—p 429
Method of Determining and Recording Human Intestinal Motility R Kegerreis Chicago—p 432
*Host Susceptibility to Common Colds I G Spiesman and L Arnold Chicago—p 438
Functional Disorders of Gastro Intestinal Tract The Gastro-Intestinal Neuroses W C Menninger Topeka Kan—p 447
Studies on Autodigestion VII Is Digestion of Living Tissues (Claude Bernard's Experiment) a Local Phenomenon? H Necheles and F Neuwelt, Chicago—p 453

Host Susceptibility to Common Colds—Spiesman and Arnold discuss their experimental and clinical observations on common colds. Sixty-three patients observed over a period of three years were selected from the outdoor clinic patients after having had a long history of various types of treatment. The patients finally chosen for this study presented no detectable pathologic conditions as determined by a complete history and by physical and x-ray examination of the sinuses and the chest. The individual suffering from repeated colds between October and April has been found to have an altered vasomotor reaction of the upper respiratory mucosa to thermal stimuli applied to the skin. When the skin is chilled there is a slow, gradual vasoconstriction of the capillaries in the mucosa of the upper part of the respiratory tract which persists for from several minutes to two hours. This represents a maladjustment of the peripheral capillary response to climatic or meteorological environment. So long as this abnormal reaction exists the host is susceptible to the common cold virus and the bacterial flora residing in the upper part of the respiratory tract. The vasomotor response could not be altered nor the incidence of common colds reduced in this group by vaccine therapy. But hydrotherapy and certain simple alterations in the diet accomplished both. The best results were obtained by a combination of the two methods of prevention. The hypersensitive or allergic type of cold is more difficult to control than the chronic, frequent and severe head cold type. The nutritional factor in susceptibility to common colds has been frequently observed during the study. It seems that the mucosa of the nose is more sensitive to allergens ingested by mouth than the skin. The nonallergic diet helped the hypersensitive group to readjust its vasomotor responses. The authors have no explanation to offer for the beneficial results obtained in the frequent infectious head cold group following the elimination of wheat breads, pastries, pies and cookies. Their experience convinces them that these foods increase the susceptibility of the sufferer from a chronic cold to repeated attacks and exercises a detrimental influence on the nasal vasomotor response to thermal cutaneous stimuli. The reservoir for the causative agent of common colds is in the main, confined to the chronic, frequent and repeated head cold subjects. The restriction of the distribution of this virus can best be approached by increasing the resistance of these people to auto-infection. This group responds to preventive and hygienic procedures better than the hypersensitive group.

The hypersensitive type of disturbance of the upper part of the respiratory tract is not communicable and from the standpoint of public health is not a source of contagious material. The person with the repeated or chronic type of common cold is out of adjustment to his environmental factors and hence requires some corrective measures to assist in adaptation, such as vasomotor stimulation (hydrotherapy), certain dietary restrictions or better mental hygienic control. While in a state of maladjustment, this portion of the population acts as reservoirs for the virus of the common cold. The extent or magnitude of the maladjustment of sufferers of the chronic or frequent cold differs in individuals. Some will find that retaining the vasomotor reflex response by hydrotherapy will be sufficient to prevent colds. Some will find the nutritional factor most important. Others will find the mental factor to be of major importance.

American Journal of Ophthalmology, St Louis

20 881-984 (Sept.) 1937

- Experimental Study of Choked Disk in the Rat W A Jeffers J Q Griffith Jr W E Fry and A G Fewell Philadelphia—p 881
Aniseikonia in Emmetropia W L Hughes Hempstead Long Island N Y—p 887
Studies on Infectivity of Trachoma VII Further Observations on Filtrability of the Infectious Agent L A Julanella M C Morris and R W Harrison St Louis—p 890
Use of Mucous Membrane in Ophthalmic Surgery E B Spaeth Philadelphia—p 897
*Hypertensive Meningeal Hydrops Syndrome Frequently Following Infection in Middle Ear or Elsewhere in the Body L M Davidoff and C G Dyke New York—p 908
Unusual Recovery from Endophthalmitis of Meningococcus Meningitis Report of Case N K Lazar Chicago—p 928
Visual Acuity Survey Report of 721 Cases C W Rainey, Chicago—p 930
Plastic Repair of Lid Hernia with Fascia Lata B R Sakler Cincinnati—p 936
Some Results of Intranasal Dacryocystorhinostomy T E Walsh and L Bothman Chicago—p 939

Hypertensive Meningeal Hydrops—From 1929 to 1935, at the Neurological Institute, Davidoff and Dyke isolated fifteen cases that presented a uniform clinical and encephalographic syndrome, consisting of signs of increased intracranial pressure, that is, increased spinal fluid pressure, headache and papilledema, but seldom vomiting. The oldest patient was 43 and the youngest 4½ years of age, eleven were females. Four patients gave a history of otitis media, one had a long history of chronic illness in which a focus of infection was sought and several organs had been removed, one gave a history of pneumonia complicated by thrombosis of the femoral vein followed by ulceration of the leg, one had attacks of cholecystitis, one patient had a four plus and another a one to two plus Wassermann reaction of the blood but their spinal fluid Wassermann tests were negative, and six patients gave no history or evidence of infection that could be considered related to the present illness. In practically all the cases the principal symptoms were headache in eleven cases, failing vision in ten, vomiting in five, tinnitus in four and dizziness in two. Diplopia was present in three cases. The duration of the symptoms varied from two years to twelve days. The chief sign in all these cases was papilledema, often of a high degree, that is, from 3 to 6 diopters. The spinal fluid showed a normal cell count in all but one case, in which 66 cells were present. The total protein was normal with the exception of one, in which 75 mg per hundred cubic centimeters was present. The gold curve was negative in all cases. Tests for globulin were negative except for one plus in the case presenting the high cell count. Plain films of the skull showed evidence of increased intracranial pressure in ten cases. In twelve of the fourteen cases in which air studies were made the air was injected directly into the ventricles because of the papilledema. A high percentage failed to show satisfactory filling on direct ventriculography, which can be explained by the small size of the ventricles and the high intracranial pressure. This combination the authors believe resulted in expulsion of the gas along the tract of the needle when ventriculography was used. Evidence of this mechanism was found. Thirteen of the fifteen patients were treated by subtemporal decompression. One, a child, showed some ataxia on clinical examination and underwent a suboccipital exploration and decompression, one had no operation whatever. In addition, the patients were treated by dehydrating measures, consisting

of limitation of fluid intake, saline cathartics or retention enemas, and intravenous hypertonic dextrose solution when indicated. All the patients improved during their stay in the hospital. After they left the hospital the dehydrating measures were continued at home, and improvement continued, but final disappearance of the papilledema required from six months to several years, with occasional recurrence of headache.

American Journal of Physiology, Baltimore

120 1212 (Sept.) 1937 Partial Index

- Physiologic Reactions of Human Body to Varying Environmental Temperatures C E A Winslow L P Herrington and A P Gagge New Haven Conn.—p 1
- Response of Liver to Oral Administration of Glucose I S Cherry and L A Crandall Jr Chicago—p 52
- Serum Potassium and Sodium as Altered by Adrenalectomy and Nephrectomy E M MacKay H C Bergman and Lois Lockard MacKay, San Diego Calif.—p 83
- Effect of Physiologic Hypersecretion on Gastrointestinal Mucosa Experimental Study in Dog C R Schmidt and S J Fogelson, Chicago—p 87
- Blood Pressure Responses to Acute Carbon Monoxide Poisoning N R Brewer Chicago—p 91
- Quantitative Method for Bio Assay of Progesterone G Pincus and N T Wertheissen Cambridge Mass.—p 100
- Interaction of Rate and Depth Components of Respiratory Control R Gesell E H Steffensen and J M Brookhart Ann Arbor Mich.—p 105
- Pupillary Inequality in Cat Following Experimental Lesions of Occipital Cortex W H Waller and R W Barris Washington, D C—p 144
- Decreased Red Cell Fragility After Splenectomy A S Gordon, W Kleinberg and E Ponder Cold Spring Harbor N Y—p 150
- Some Observations on Organization of Retinal Response S H Bartley, St Louis—p 184
- Oxygen Deficiency Carbon Dioxide and Temperature Regulation E Gellhorn Chicago—p 190
- Urinary Excretion of Sucrose and Its Distribution in Blood After Intravenous Injection into Normal Men N M Keith and Marschelle H Power Rochester Minn.—p 203

Am J Syphilis, Gonorrhea and Ven Dis, St Louis

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- *Present Needs in the Public Health Control of Gonorrhea T Parran, Washington D C—p 475
- Clinical Excretion of Bismuth II Urinary Excretion of Bismuth After Clinical Intramuscular Injections of Sodium Iodobismuthite (Sodium Bismuth Iodide (Iodobismutol) and Sodium Bismuth Thioglycollate (Thiobismutol) T Sollmann H N Cole and Katharine Henderson with collaboration of G W Binkley W H Connor and M Sullivan Cleveland—p 480
- Id III Fecal and Total Excretion T Sollmann H N Cole and Katharine Henderson with collaboration of G W Binkley W H Connor and M Sullivan Cleveland—p 492
- Id IV Late Excretion of Bismuth After Cessation of Treatment T Sollmann H N Cole and Katharine Henderson with collaboration of G W Binkley W H Connor and M Sullivan Cleveland—p 506
- Clinical Evaluation of Oral Bismuth (Bismutate) Therapy in Early Infectious Syphilis in the Female Carmen C Thomas Philadelphia—p 513
- Failure of Sulfanilamide to Affect Syphilis in Rabbit Note A D Campbell Baltimore—p 524
- *Experimental Treatment of Early Syphilis with Artificial Fever Combined with Chemotherapy W M Simpson and H W Kendell Dayton Ohio—p 526
- Granuloma Inguinale Preliminary Report on Certain Microscopic Observations D C A Butts Philadelphia—p 544

Present Needs in the Public Health Control of Gonorrhea—Parran maintains that the ultimate attainment of success in the control of gonorrhea lies in the vigorous prosecution of research work, particularly laboratory experiments which may be correlated with clinical research. He recommends that the furtherance of research work in gonorrhea is the immediate objective. The United States Public Health Service will cooperate in this. Before any new method is accepted in the future it should be studied critically in order to determine whether it is one of real merit.

Treatment of Early Syphilis with Artificial Fever and Chemotherapy—With the hope that time and expense might be lessened and that the disastrous late complications of syphilis might be prevented, Simpson and Kendell subjected thirty-four patients with primary and secondary syphilis to combined fever and chemotherapy. The usual course of fever therapy in all but six of these patients consisted of approximately fifty hours of sustained rectal temperature between 105 and 106 F, the average being 105.8 F. The artificial fever therapy was administered at approximately weekly intervals

for a period of ten weeks. With the exception of two patients who exhibited idiosyncrasy to chemicals, the usual course of chemotherapy consisted of thirty injections of bismuth arspenamine sulfonate each containing 0.2 Gm, or thirty injections of neoarsphenamine, each containing 0.3 Gm, and thirty injections of a bismuth compound, each containing 0.2 Gm of metallic bismuth. No essential difference was observed in the response of the patients treated with bismuth arspenamine sulfonate or neoarsphenamine and bismuth. The first ten intravenous injections were administered one-half hour before the fever treatment was begun. The injections of bismuth were given intramuscularly just before each fever session was started. Injections of chemotherapeutic agents were then given at weekly intervals for a period of twenty weeks at the conclusion of the course of combined fever-chemotherapy. The injections of neoarsphenamine and bismuth were given concurrently. Ordinarily, the standard diagnostic tests remained strongly positive during the first four to six weeks of combined treatment. During the same interval the Kahn quantitative units would ordinarily exhibit a rise after the first treatment and a progressive decline during the next four to six weeks. The combined therapy appears to intensify the curative action of the chemotherapeutic agents. Fever therapy alone or chemotherapy alone, as applied to control groups of patients, was inadequate in a high proportion of cases. In certain instances in which syphilitic lesions progressed in spite of chemotherapy, these lesions began to heal promptly after fever therapy was instituted. The response of certain patients who received a relatively short course of fever therapy, combined with chemotherapy, suggests that an equally favorable outcome might result from a shorter course of fever therapy in those patients who exhibit a prompt and uniform decline in the serologic reactions as measured by truly quantitative tests. Conversely, it is quite apparent that certain patients will require larger amounts of fever therapy or chemotherapy, or both.

Annals of Otol, Rhinol and Laryngology, St Louis

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- Anomalies of Cochlea in Patients with Normal Hearing L M Polver and S J Crowe Baltimore—p 579
- Observations on Sinus Abnormalities in Congenital Total and Hemianopsia of the Nose V P Blair, J B Brown and L T Byar St Louis—p 592
- Nasal Blood Vessels Which Serve as Arteries in Some Mammals and as Veins in Some Others P F Swindle Milwaukee—p 600
- Study of Nutrition in Relation to Infections of Upper Respiratory Mucous Membranes R A Hetler St Louis—p 609
- Clinical Relationship of Infections in Upper Respiratory Tract to Certain Types of Chronic Posterior Uveitis Part II (Supplemental Report) W D Gill San Antonio Texas—p 643
- *Nontumorous Cysts of Maxilla Interesting Cases and Discussion R S Rosedale and S W Koepf Buffalo—p 652
- Cerebellar Herniation as Cause of Death C S Nash Rochester N Y—p 673
- *Picric Acid Calcium Carbonate Treatment (Stewart) of Osteomyelitis Applied to Ear and Nose Conditions H J Gray, Newington, Conn.—p 681
- Comparative Study of Sphenoid Sinus Study of 1600 Skulls F W Dixon Cleveland—p 687
- Evaluation of Displacement Method Review of Literature A W Proetz St Louis—p 699

Nontumorous Cysts of Maxilla—Rosedale and Koepf report seven cases of maxillary cysts of dental origin. Six of these encroached on the antrum. One was complicated by an osteoma, and in one case impacted teeth were present within the cyst. Supernumerary teeth were present in two others. In two cases the cyst became manifest after extraction of teeth, and two were associated with carious teeth. The other three were of follicular origin. Cysts of dental origin, other than those resulting from adamantinomas, are usually designated as follicular or radicular cysts. The former are those which are associated with the second dentition. Their presence often can be suspected from defects in the dental arch due to unerupted or supernumerary teeth. They are symptomatic unless of large size or infected, and are most often discovered by x-ray examination. Radicular cysts are always found in connection with infection at the root of a devitalized tooth. They do not contain teeth. Both types of cyst may be infected or noninfected and the contents may vary from fluid to semi-solid amorphous material. Enlargement in either type may cause secondary devitalization of neighboring teeth. Periapical

infection is considered the exciting influence in the development of radicular cysts. The usually accepted theory of the development of a follicular cyst is that it results from the hollowing out of the follicle of an unerupted tooth. There are many theories regarding the histogenesis of cysts of dental origin, each of which has ardent testimony in behalf of its validity. However, when critically scrutinized, none of them seem to conform to usually accepted pathologic concepts. The treatment of these cysts should consist of removing the cyst by blunt dissection through an intra-oral incision made over the point of greatest swelling. The remaining cavity is then connected to the nose through a large window under the inferior turbinate. The first incision is sutured. The cavity is irrigated through the antroanasal window. This type of treatment tends to result in less deformity and discomfort and more rapid healing than packing and irrigation through the intra-oral incision.

Trinitrophenol-Calcium Carbonate Treatment in Sinus Infections.—Gray believes that chronic infections of the accessory sinuses, wherein there is often an associated osteomyelitis (caries or necrosis) in varying degrees, may be considered analogous to chronic osteomyelitis. Irrigations of various solutions, for their antiseptic and healing effects, have been unsuccessful in the treatment of chronic infected sinuses, particularly the maxillary sinuses. The maggot treatment cannot be used, and the extract, if known to the patient, would be objected to if not considered undesirable by the physician. The Stewart treatment (trinitrophenol-calcium carbonate) offers a desirable method of treatment when preliminary operative work, debridement and proper drainage, has been done. Since there is a precipitate formed between the trinitrophenol-calcium carbonate of a fine nature, a sufficiently large opening must be made to allow use of the Stewart method of treatment in selected cases of chronic conditions of the ear and nose (accessory sinuses). The trinitrophenol solution is easily sprayed into the opened sinuses by use of an atomizer equipped with the long, slender, detachable spray tip (which may be sterilized). The tip can be easily curved to insert through the opening especially through a naso-antral opening, into the maxillary sinus. The calcium carbonate suspension is applied in the same manner. The surroundings must be kept as aseptic as possible during treatment. Contrary to other methods, the trinitrophenol-calcium carbonate alleviates existing pain. It is well tolerated by the patient from a psychic as well as physical standpoint. Four case histories are submitted that demonstrate the value of the foregoing method. Granulation tissue formed promptly, purulent discharge was rapidly reduced, healing was rapid, pain and discomfort were minimized, and the residual scar was less marked than that with any other method of treatment, excepting the maggot treatment. It also produced rapid healing in chronic wounds of the flesh in addition to chronic bone conditions.

Archives of Otolaryngology, Chicago

26 259 386 (Sept.) 1937

- Critique of Present Treatment of Deafness Due to Lesions in Conduction Mechanism. I. Friesner and J. G. Druss. New York.—p. 259.
Ethmoidophrontal Operation. W. L. Simpson. Memphis, Tenn.—p. 270.
Analysis of Results of Vaccination of College Students Against Colds. K. M. Houser. Philadelphia.—p. 283.
Tracheopathia Osteoplastica (Osteoma of the Trachea). H. J. Moersch. A. C. Broders and F. Z. Havens. Rochester, Minn.—p. 291.
Surgical Treatment for Suppurative Petrositis. A Critique. S. J. Kopetzky. New York.—p. 294.
Deafness Associated with Meningococcemia. H. Leichenger and S. M. Abelson. Chicago.—p. 306.
Otitic Meningitis. Report of Case in Which Treatment Was Followed by Recovery. D. Woodman. New York.—p. 310.
Logical Surgical Approach to Tip Cells of Petrous Pyramid. R. M. Dearmin. Indianapolis.—p. 314.
Glossopharyngeal Neuralgia Associated with Abscess of Petrous Tip Following Mastoiditis. H. P. Schlut. New York.—p. 321.
Irradiation for Infection in Otolaryngology. T. C. Galloway. Evanston, Ill.—p. 327.
The Paranasal Sinuses. S. Salinger. Chicago.—p. 337.

Results of Vaccination Against Colds.—The student health department of the University of Pennsylvania decided to give prophylactic vaccination against colds to those students who wished to give this treatment a trial. Houser reports that in the last four years 108 students have been so treated. A series of nine injections of the following doses was given to each subject: 0.1 cc, 0.2 cc, 0.3 cc, 0.4 cc, 0.5 cc, 0.6 cc,

0.7 cc, 0.8 cc and 1 cc of a stock vaccine. The smaller doses were given every three to five days, whereas the doses above 0.5 cc were given at weekly intervals. In no case did any constitutional reaction occur. Many complained of slight soreness of the arm, which usually disappeared in from twenty-four to forty-eight hours. A few experienced transient symptoms of an acute cold within the forty-eight hours following injection. In 1936 and 1937, questionnaires were sent to members of the group who were inoculated. Although ninety-four replies were secured to the questionnaires, only eighty-six could be included in the final report because only three months had elapsed since the completion of the series of inoculations for the eight persons whose answers were discarded. On tabulation of the results, it was found that in this group the total number of colds was 479 in the years prior to treatment and 181 in the year subsequent to treatment. The total number of days for the group during which they suffered from colds dropped from 5,160 a year before treatment to 1,666 in the year after vaccination. Of the eighty-six subjects, sixty-eight reported improvement subsequent to treatment. Of this group, fifteen had no colds during the winter following the series of injections. Eighteen were improved in no way by the injection. Of the eighty-six students, only twenty-eight were completely free from any local condition that might be considered a predisposing factor, such as the granular posterior pharyngeal wall studded with lymphoid islands, slight nonsuppurative sinusitis or a borderline nasal deformity. Of this group, twenty-five were improved. The greatest improvement occurred in reducing the severity and duration of colds rather than in eliminating them. This would be in keeping with the virus causation, for, if this is the method of production of most colds, one certainly could not expect to prevent their occurrence by the administration of a bacterial vaccine, but the chances of influencing the secondary stage, in which bacteria play a prominent part, might be considerable. Until something better is available it seems worth while to continue this form of therapy. There is little evidence that colds are prevented by this type of therapy.

Archives of Pathology, Chicago

24 281 410 (Sept.) 1937

- Attempts at Cultivation of Viruses Producing Leukosis in Fowls. J. Furth and C. Breidis. New York.—p. 281.
*Chylous Effusions Produced by Experimental Ligation of Superior Vena Cava. Chemical and Cytologic Studies. C. S. Robinson, R. S. Cunningham, A. Blalock, Mary E. Gray and B. C. Rogers. Nashville, Tenn.—p. 303.
Anatomic Changes Produced by Thyroid Feeding and by Injection of 3,5-Diodotyrosine. C. L. Connor. San Francisco.—p. 315.
Wave Mechanics of Protoplasmic Action. XI. Experimental Histology of Nerve Fibers. E. J. Carey. Milwaukee.—p. 325.
Auricular Thrombosis in Rheumatic Heart Disease. I. Graef, A. R. Berger, J. J. Bunim and C. E. de la Chapelle. New York.—p. 344.

Chylous Effusions and Ligation of Superior Vena Cava.—Robinson and his co-workers found references to 100 cases in which the diagnosis of chylothorax seems to have been correct. In eighty-three of these cases the data on the cellular content of the fluid and on the changes in the cell picture in the blood stream have been meager. Although somewhat more complete, the chemical studies on these fluids have also been inadequate. Therefore thirteen differential blood counts were made in ten of the reported cases of chylothorax. The total white blood cell counts varied from 4,000 to 25,000. In six instances there was a high proportion of lymphocytes, while in seven the lymphocytes varied from 6 to 16 per cent. The authors had previously produced experimental chylothorax in twenty-one of thirty-six animals (dogs and cats), in each of which the superior vena cava was ligated. The present report is a continuation of that study, with particular emphasis on the chemical and cellular composition of the fluids. The cellular changes occurring in the blood stream as a result of the ligation of the superior vena cava are compared with the cellular picture of the chylous fluids. Eleven additional animals have been studied since that time. In twenty-eight animals of this group typical chylous effusions developed, in eleven fluid was obtained from the pleural cavities, which was, however, not chylous, and in eight animals there was no fluid. In all the experiments in which the superior vena cava was ligated it is assumed that the development of chylous effusions was dependent on the obstruction thus produced to the delivery of lymph from the abdominal viscera through the thoracic duct and its collateral

and anastomotic channels. Ligation of the superior vena cava has been found to produce milky fluids which are extremely rich in lymphocytes but which also contain neutrophils. In the circulating blood of animals the total number of lymphocytes and the total number of eosinophils drop markedly following ligation of the superior vena cava. The obstruction of lymphatic drainage is assumed to be of sufficient importance to account for the decrease in lymphocytes. Milky fluids produced by ligation of the superior vena cava in dogs are true chylous effusions the opacity of which is due to free fat. The lipids estimated as "neutral fat" comprise about 80 per cent of the total lipids. The quantities of free cholesterol are small but show a tendency to form a constant fraction of the total lipid. The esterified cholesterol, on the other hand, is less inclined to vary with the neutral fat. The total nitrogen values probably include nitrogen from nonlipid compounds. The aminonitrogen is mostly due to true lipids, and it tends to vary with the neutral fat. The phosphatide fraction contains substances that are neither lecithin nor cephalin. These, too, tend to vary with the neutral fats. The correlation between the phosphorus and aminonitrogen seems to indicate that they, to a large extent, rise and fall together.

Canadian Medical Association Journal, Montreal

37 209-310 (Sept.) 1937

- Differential Diagnosis of Pain in the Chest J. A. Oille, Toronto—p. 209
- *Myasthenia Gravis. Clinical Review of Eighty Seven Cases Observed Between 1915 and the Early Part of 1932. F. S. Kennedy, London, Ont. and F. P. Moersch, Rochester, Minn.—p. 216
- Glandular Therapy in Gynecologic Conditions. Preliminary Report. Marion Hiltard, Toronto—p. 223
- Lipid Content of Leukocytes from Heparinized Blood. E. M. Boyd and R. B. Murray, Kingston, Ont.—p. 229
- *Gynecologic and Endocrinologic Aspects of Sterility. H. A. Baron, Montreal—p. 232
- Contact Eczema from Dyed Clothing. J. F. Burgess, Montreal—p. 237
- Transient Recurrent Bundle Branch Block. S. Eidlow, Montreal—p. 240
- Rupture of Membranes in Relation to Labor. J. C. Goodwin, Toronto—p. 243
- Comparative Study of Three Surgical Masks. P. P. Gauthier, Montreal—p. 250
- Lighting as a More Exact Science. S. Ramsey, Montreal—p. 253
- Two Common Complications of Ear Infections. P. E. Ireland, Toronto—p. 256
- Irradiation Therapy of Cancer of the Breast. C. M. Henry, Regina, Sask.—p. 261
- Further Report on Ascorbic Acid Treatment of Whooping Cough. M. J. Ormerod, B. M. Unkauf and F. D. White, Winnipeg, Manit.—p. 268

Myasthenia Gravis—In fifty-one of the eighty-seven cases of myasthenia gravis under review, Kennedy and Moersch could not discover any cause that might be considered as a possible factor in the causation of the disease. In twenty-seven it appeared that some infection, such as a "cold," "flu," tonsillitis and pneumonia played a precipitating part, although the relationship of apparent cause and effect was not always clear. Recurring episodes of myasthenia gravis were frequently preceded by some acute infectious process. The ages of the patients at the time of the first onset of the symptoms varied from 10 to 77 years. The greatest number were in the third and fourth decades of life. There were forty-five male and forty-two female patients. The factor of race had no apparent significance. In no instance was there any evidence of either familial or hereditary factors. There was no close correlation between the occupation of the patient and the situation of the early muscular weakness. There was no special environmental or geographic characteristic. The length of time that elapsed between the onset of the first symptoms and the making of the correct diagnosis ranged from one month to twenty-five years and varied considerably. For the eighty-seven cases this period averaged 48 years. The appearance of the first symptom of myasthenia gravis and the appearance of the first objective sign of the disease paralleled each other rather closely. The ocular muscles were involved in 78 per cent of the cases, facial muscles and masseter muscles in 61 per cent, muscles of deglutition and phonation in 58 per cent, muscles of the arms in 29 per cent, muscles of the legs in 24 per cent and muscles of the neck and shoulders in 17 per cent. No unusual reflex disturbances were observed in any of the cases. The deep tendon reflexes were occasionally decreased or even increased but never absent. The spinal fluid was entirely normal in the

twenty-eight of the thirty-two cases in which it was examined. Not infrequently myasthenia gravis may present itself under the guise of marked general fatigue, but not every state of chronic fatigue is a form of myasthenia gravis. Twenty-seven patients had a complete remission which lasted on the average 2.2 years. Any accompanying illness exaggerates the existing symptoms and also tends to precipitate added myasthenic symptoms. There were thirty-four deaths. As neither any therapeutic measure of value nor any practical or consistent regimen for treating patients was available at the time, this mortality represents essentially that of the untreated disease.

Gynecologic and Endocrinologic Aspects of Sterility—Baron declares that in 70 per cent of the cases of sterility there is no single absolute cause and therefore the sterility is only relative. A relative sterility in one partner may be overcome by a high fertility in the other. Local genital abnormalities, the influence of constitutional depressions, the multiple incidence of etiologic factors and the division of responsibility between male and female are the causes given by Meaker. Many cases of sterility cannot be explained by present knowledge. Doubtless the newer advances in endocrinology and reproductive physiology will help to solve some of its problems. That a specific immunity exists in some cases is not beyond the realm of probability, since by changing partners conception often occurs after so-called previous sterile matings. Endocrinology, although promising as it may seem, can at best be only a partial factor as far as sterility is concerned. Only from 10 to 15 per cent, at most, of cases will be aided by endocrine preparations. The tide of enthusiasm which hailed the discovery of the sex hormones is receding. In the final analysis the major causes of sterility are still obstructive—whether congenital or acquired, through new growth or inflammation anywhere in the genital tract, from hymen to tubal fimbriae. Tubal closures are frequently the result of abortions which become mildly infected. They will remain only so long as knowledge of the control of conception is limited to the favored few. When birth control makes abortions unnecessary an important forward step will be made in preventive medicine and, paradoxical as it may seem, will have lowered the incidence of sterility. The major problem of sterility is a gynecologic and urologic one, and only by the continued cooperation of these two specialties will the greatest good be achieved.

Florida Medical Association Journal, Jacksonville

24 133-190 (Sept.) 1937

- Heart Block. T. Z. Cason, Jacksonville—p. 149
- *Tetanus. J. S. Stewart, Miami—p. 153
- Medical Aspect of Postoperative Crises. M. J. Flipse, Miami—p. 156
- Worship of the Sun. L. S. Oppenheimer, Tampa—p. 159
- Diagnosis and Treatment of Diseases of Tracheobronchial Tree. J. Buff, Orlando—p. 163
- Treatment of Burns. G. H. McSwain, Arcadia—p. 165
- Atypical Symptoms of Malaria. L. L. Whiddon, Fort Pierce—p. 167

Tetanus—Stewart declares that prophylaxis must not stop with tetanus antitoxin. The wound must be made unfavorable for the germ. Closed wounds must be eliminated and foreign bodies removed. Secondary infection must be controlled. It is only by debridement that foreign material and contused tissues can be seen and removed and punctured wounds made into open wounds. The mere injection of 1,500 units of tetanus antitoxin is no longer considered adequate treatment of contused or punctured wounds. Puncture wounds, such as nail wounds to the sole of the foot, should be excised and splinter wounds should be opened to their depth. The importance of readministration of prophylactic serum in deep and severely lacerated wounds and compound fractures is often overlooked. It is well to remember the ability of the spores of the tetanus bacillus to lie dormant and, since the serum remains in the body for only fourteen days, a second or even a third injection is frequently indicated. Clinical and experimental experiences have proved that antitoxin has no effect on toxin already fixed and causing symptoms. The intravenous administration (from 20,000 to 60,000 units in 300 cc of physiologic solution of sodium chloride) of serum is advised under general anesthesia or tribromethanol in amylene hydrate at the first suggestive symptom. Muscular spasm and reflex convulsions should be controlled as much as possible by sedatives. Adequate food and nourishment should be given by the nasal catheter and specialized nursing care in quiet isolation should be demanded.

Journal of Allergy, St Louis

S 523 644 (Sept.) 1937

- Method of Measuring Rate and Degree of Absorption of Antigens as Applied to Effects of Certain Drugs Menstruums and Modes of Administration S M Feinberg and T B Bernstein, Chicago—p 523
- Crossed Reactions to Household Dusts H C Wagner and F M Rackemann Boston—p 537
- Lack of Correlation Between Hypersensitivity to Egg White and Symptoms of Injury Lois Almon and Helen T Parsons Madison Wis—p 547
- Prophylactic Treatment for Ragweed Hay Fever Statistical Study J A Clarke Jr and H C Leopold Philadelphia—p 560
- *Deficiency of Atmospheric Humidity as Contributing Factor in Prolonged Asthma S J Parlato Buffalo—p 566
- Possibility of an Allergic Factor in Essential Hypertension W T Vaughan and C J Sullivan Richmond Va—p 573
- Bone Scorings in Normal and Allergic Children R Chobot and E F Merrill New York—p 588
- Calculating Pollen Concentration of Air E C Cocke University Va—p 601

Deficiency of Atmospheric Moisture as Factor in Prolonged Asthma—Parlato hopes to show that it is really the control of humidity which plays an important part in relieving asthmatic patients. He investigated the effects of the lack of sufficient moisture in the air and of raising the temperature during the colder months of the year, he concludes that a lack of sufficient moisture in the air or relative humidity in well heated homes and other indoor places during the colder months is an important factor in the causation of prolonged asthmatic attacks. The use of belladonna, stramonium and allied drugs often is contraindicated. The latter are to be used only with great caution. Their paralyzing action on the mucous glands of the respiratory tract aggravates and delays recovery from an asthmatic attack. Treatment calls for the immediate withdrawal of any of the foregoing drugs. Methods of supplying an adequate amount of moisture are described. With a normal relative humidity, patients responded more readily to the usual therapeutic measures which are used for the relief of asthma. Subsidence of prolonged asthma is more prompt and effective. A wider distribution of accurate air conditioners in homes, industry and business will provide a necessary and important means of maintaining a correct temperature and relative humidity, thus helping to reduce the number and duration of prolonged asthmatic attacks.

Journal of Lab and Clinical Medicine, St Louis

22 1209 1326 (Sept.) 1937 Partial Index

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- Comparative Study of Oral and Subcutaneous Vaccination Against Typhoid Fever Based on Agglutination Titrations H D Moor and Ida Lucille Brown Oklahoma City—p 1216
- Ascorbic Acid Content of Red Cells and Plasma M Pijoan and E Eddy Boston—p 1227
- Lobar Pneumonia and Organic Heart Disease M M Weiss Louisville Ky—p 1230
- Partition of Urea in Blood E M Boyd and R B Murray Kingston Ont—p 1232
- Digitalis Diuresis and Certain Blood Serum Characteristics J H Defandorf Washington D C—p 1237
- Amount of Complement in Blood in Rheumatic Fever and Rheumatoid Arthritis M Rachmilewitz and W Silberstein Jerusalem Palestine—p 1240
- *Does Aspiration Biopsy of Tumors Cause Distant Metastasis? J McLean and K Sugiura New York—p 1254
- Effect of Intermittent Venous Occlusion on Circulation of Extremities Studies of Skin Temperature E V Allen and R E McKechnie, Rochester Minn—p 1260
- Quantitative Determination of Convulsive Reactivity by Electric Stimulation of the Brain with Skull Intact E A Spiegel Philadelphia—p 1274
- New Method of Recording Physiologic Activities I Recording Respiration in Small Animals C Fenning Salt Lake City—p 1279
- New Method of Recording Physiologic Activities II Simultaneous Recording of Maternal Respiration Intra Uterine Fetal Respiration and Uterine Contractions C Fenning and B E Bonar Salt Lake City—p 1280
- Scientific Method for Preparation of Normal Physiologic Saline Solution in Hospitals A G Keller Philadelphia—p 1290

Concentration of Agglutinin in Vaccination Against Typhoid—During the last two years, Moor and Brown have carried out a comparative study of the oral and subcutaneous administration of typhoid vaccine in 187 human subjects. Agglutination titrations were made in all cases before the vaccine was administered and again four weeks after the last

dose. Typhoid vaccine administered orally produced as great or greater concentrations of agglutinin antibodies in the blood serum of human beings as that administered subcutaneously. The oral vaccine brings about this concentration of agglutinin antibodies in a shorter time. No reactions were observed following the administration of the oral vaccine. Severe reactions, causing loss of time from work, do occur when the vaccine is given subcutaneously. Generally subjects take the oral vaccine more willingly than they do the subcutaneous. Economically and practically the oral vaccine is more desirable than the subcutaneous.

Aspiration Biopsy and Distant Metastasis—McLean and Sugiura performed repeated aspiration biopsy on 155 rats and mice into which they had transplanted Flexner-Jobling rat carcinoma and mouse sarcoma 180. They observed that moderate or excessive aspiration biopsy procedures performed repeatedly did not increase the percentage of distant metastases, nor did it produce any demonstrable damage to the capsule of the tumor or result in implantation of the tumor along the route that the needle had traversed.

Journal of Nutrition, Philadelphia

14 223 328 (Sept.) 1937

- Biologic Assay of Lactoflavine with Chicks T H Jukes Davis Calif—p 223
- Assay Procedure for Vitamin K (Antihemorrhagic Vitamin) H J Almquist and E L R Stokstad Berkeley Calif—p 235
- Sources and Nature of Chick Gizzard Factor H J Almquist Berkeley Calif—p 241
- Vitamin A Activity of Butters Determined by Various Methods M E Leuschen Atchison Kan Bernice L Kunerth M M Kramer and W H Riddell Manhattan Kan—p 247
- Influence of Some Commonly Used Salt Mixtures on Growth and Bone Development of Albino Rat L B Mendel Rebecca B Hubbell and A J Wakeman New Haven Conn—p 261
- New Salt Mixture for Use in Experimental Diets Rebecca B Hubbell L B Mendel and A J Wakeman New Haven Conn—p 273
- *Effect of Exercise on Metabolism Following Ingestion of Water, Glucose and Fructose as Shown by Course of Respiratory Quotient J Haldy and G Bachmann with technical assistance of W Wynn and J W Little Emory University Ga—p 287
- Vitamin E and Growth H S Olcott and H A Mattill Iowa City—p 305
- Relation of Ascorbic Acid Ingestion to Mineral Metabolism in Children Amy L Daniels and Gladys J Everson with cooperation of Olive E Wright Mary F Deardorff and Florence I Scoular Iowa City—p 317

Effect of Exercise on Metabolism—Haldy and Bachmann studied the respiratory quotient as affected by exercise taken by two subjects immediately after the ingestion of 500 cc of water, 50 Gm of dextrose, 50 Gm of fructose and a mixture of 25 Gm of each of these two sugars dissolved in 500 cc of water at 37 C. The exercise consisted of performing 550 kilogrammeters of work per minute for two consecutive periods of fifteen minutes on a Prony brake bicycle ergometer. In the control experiments with water the respiratory quotient rose to approximately 0.9 during exercise, an increase of 0.1 above the base line. The increase of the respiratory quotient during exercise was practically the same when the sugars were ingested as when water alone was taken immediately before the exercise. The rise in the respiratory quotient during exercise in the experiments with water and the sugars shows that there was an increase in the relative and absolute amount of carbohydrate oxidized. The percentage of carbohydrate oxidized was not increased by the ingestion of the sugars immediately before exercise. Dextrose and fructose were equally ineffective in raising the percentage of carbohydrate oxidized during exercise. There was more carbohydrate oxidized in the second than in the first exercise period. During the first recovery period in the control experiments with water the respiratory quotient remained at practically the same level as during exercise indicating that the increase in carbohydrate metabolism induced by exercise persisted for a few minutes afterward. In the experiments with the sugars there was rise in the quotient during the first recovery period above the level reached during exercise. The greatest rise occurred in the experiments with a mixture of the sugars the least in those with dextrose. Exercise accelerated the metabolism of dextrose, whereas it had no effect on that of fructose. As the ingested dextrose did not increase the total carbohydrate oxidation during exercise it must have had a greater sparing effect than fructose on the body stores of carbohydrate.

Journal of Urology, Baltimore

38 251 330 (Sept.) 1937

- Adenoma of Adrenal Gland Associated with Grawitz Tumor of Kidney W Rosenberg Cleveland—p 251
- Duplication of Lower Ureter Ending Blindly I R Sisk and P Kundert, Madison Wis—p 261
- Brain Metastasis in Carcinoma of Bladder W F Leadbetter and J A C Colston, Baltimore—p 267
- Leiomyosarcoma of the Bladder Report of Case and Review of Literature A F Weyerbacher and J F Balch Indianapolis—p 278
- *New Methods of Preoperative Study in Prostatic Hypertrophy C H deT Shivers Atlantic City N J—p 288
- Tricuspid Endocarditis Following Urethral Dilatation (Probably Gonorrheal) N F Ockerblad and H E Carlson Kansas City—p 300
- The Perennial Prostate J F McCarthy New York—p 306
- Primary Carcinoma of the Male Urethra F O Harbach, Syracuse N Y—p 311
- Hormone Excretion in Cases of Prostatic Hypertrophy H P Rusch and P R Kundert Madison, Wis—p 316
- Advantages of Punch Method of Removing Obstructing Portions of the Prostate H C Bumpus Jr Pasadena Calif—p 322
- Modification of Evacuator M Ellik, Iowa City—p 327

Preoperative Study in Prostatic Hypertrophy—Shivers states that during the last three years it has been the practice at the urologic department of the Atlantic City Hospital to add to the preoperative study of the hypertrophic prostate a routine intravenous urogram and a cystoscopic grading of all prostates, taking into consideration the shortcomings of each procedure. It was found that by intravenous urography the presence or absence of renal excretion, the promptness of excretion, the degree of concentration and the presence or absence of gross changes (hydronephrosis) in the upper part of the urinary tract could be determined with a fair degree of accuracy. The author strongly advises against retrograde pyelograms in the presence of prostatic hypertrophy even when it is mechanically possible to introduce ureteral catheters, as there is always great danger of activating a latent infection in one or both kidneys. The physical examination should never be neglected even though intravenous urography is regularly practiced. In cases showing gross renal changes in the presence of a persistent pyuria, resection should be done even though all other tests are within normal limits. In every case of latent chronic infection of the upper part of the urinary tract with definite gross changes, as shown by the urogram, resection should always be preceded by a suprapubic cystostomy. A patient who will not tolerate a suprapubic cystostomy will frequently not survive a prostatic resection. At a suitable time after suprapubic drainage, resection may be carried out without endangering the patient's life. Kirwin recommends resection in cases showing marked renal impairment and other constitutional complications. The author does not agree with this recommendation if impairment of renal function is due to infection. Patients with changes in the upper part of the urinary tract, whether they are bilateral or unilateral, do much better with a two-stage prostatectomy. Urethral drainage does not seem to be adequate in these patients and, as the risk is greater, the two-stage procedure is definitely safer. A system of cystoscopic grading has been adopted which has been most helpful in selecting the type of gland best suited for resection.

Medical Bull of Veterans' Adm, Washington, D C

14 103 206 (Oct.) 1937

- Management of Irritable Colon (Mucous Colitis) J A Barger—p 103
- Multiple Sclerosis C R Jackson—p 105
- Psychosis with Multiple Sclerosis W H Malone—p 113
- Neurologic Sequels of Spinal Anesthesia M M Barshap—p 118
- Treatment and Course of Neurosyphilis Case Reports J H Baird E K Allis and S F Hoge—p 119
- Surgical Treatment of Far Advanced Active Pulmonary Tuberculosis J G Slaney—p 146
- Effective Counteraction of Avertin Narcosis G A Resta—p 149
- Pancreatitis Acute and Chronic Case Reports F R Sedgley—p 151
- Lobar Pneumonia (Analysis of Forty Nine Cases) M C Messina—p 157
- Syphilis of the Lungs W E Hamlin—p 161
- *Consideration of Gingivitis and Oral Spirochetoses with Mercurial Treatment for Vincent's Infection and Noma O A Grove—p 164

Gingivitis and Oral Spirochetoses—Grove believes that oral hygiene offers the most successful weapon in diminishing the incidence of gingivitis and Vincent's angina. Surgical asepsis is indicated whenever tissues are broken, severed or bruised or the continuity of the epithelial cells is disrupted in

any manner. Pyorrhea cannot be cured or controlled by the present passive methods of approach. It has been estimated that 15 per cent of the work involves operative work by the dentist, and 85 per cent rests entirely on the oral hygiene habits of the patient. To maintain a cure in pyorrhea it would seem necessary that the patient use an alkaline mouthwash daily, one that aids in the removal of material harboring microorganisms and one that will penetrate into the subgingival and other spaces. Frequently persons who have been regularly under dental supervision present themselves for treatment of pyorrhea which has been years in developing, so that it is too late to save the teeth, owing to the involved systemic condition—such as arthritis, secondary to focal infection. The same organisms are responsible for gingivitis, pyorrhea, Vincent's infection, noma and Ludwig's angina. Mercury in the form of its insoluble salt (calomel) as a systemic spirocheticid, proper elimination of body waste material with salts, and the use of hydrogen peroxide as a local oxidizing agent offer simple agreeable and effective treatment for the diseases caused by the Vincent spirochete.

Nebraska State Medical Journal, Lincoln

22 285 324 (Aug.) 1937

- Dangers and Technic of Spinal Puncture J J Keegan Omaha—p 285
- *Preventing Recurrent Anorectal Fistula R R Best Omaha—p 288
- Conservative Treatment of Surgical Kidney Disease P S Adams Omaha—p 292
- Traumatic Abdomen J D Bisgard Omaha—p 294
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- Postoperative Heat Stroke H H Everett and R H Whitman Lincoln—p 304
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- Review of Sixty Four Cases of Pernicious Anemia E B Reed Lincoln—p 312

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- Responsibility of the Official Agency in Maternal and Child Health J W Bell Lincoln—p 325
- Treatment of Pyelitis as Serious Complication of Pregnancy Case Report of Five Deaths J R Reinberger and R E Anders Memphis Tenn—p 328
- Modern Prenatal Care B R Farner Norfolk—p 333
- Puerperium Immediate and Remote H S Morgan Lincoln—p 335
- Preventive Pediatrics for the Practicing Physician E J Huenek Minneapolis—p 339
- Value of Convalescent Serum in Acute Contagious Diseases C V Hyland Los Angeles—p 342
- Differential Diagnosis of Anemias in Infants and Children R B Eldredge Omaha—p 348

Preventing Recurrent Anorectal Fistula—Best gives three steps in the prevention of recurrent anorectal fistula: (1) the attempt to establish the internal opening definitely before operation (which is occasionally impossible even after repeated attempts), (2) the correct operative procedure with direct attack on the internal opening and (3) proper postoperative care. A fistula with its external orifice situated behind a plane passing transversely through the center of the anus usually has its internal opening in the midline posteriorly or just to one side of the midline, while a fistula with its external aperture in front of this plane generally terminates immediately opposite this external opening. The internal stoma is usually found in a diseased crypt, the margins of which are inflamed, edematous or ragged, or it may be identified by a drop of pus, a small tuft of granulation tissue, a papule, or at times merely a small injected area. The questionable region should always be examined with a small hooked probe. If no internal aperture is found and no diseased crypt exists, one must assume that the tract is not complete and excise all tissue down to the depth of the fistula. Here the discoloration of the diseased tissue by the methylene blue solution more clearly identifies any small ramifications. The existence of incomplete or blind internal fistulas is controversial, but that these actually occur at times cannot be denied. A blind fistula may develop in this region just as a blind sinus tract may occur elsewhere in the body. Before finally assuming that a fistula is a blind external tract, one should make repeated attempts to locate the internal opening over a period of weeks, and, if not found, great care and ingenuity must be exercised at operation before concluding that no internal opening exists.

New England Journal of Medicine, Boston

217 503 540 (Sept 23) 1937

- Comments on Certain Aspects of Rheumatic Fever and Rheumatic Heart Disease L A Conner New York—p 503
An Analysis of the 1935 Epidemic of Infantile Paralysis in Massachusetts A T Legg Boston—p 507
Cerebral Fat Embolism Report of Case A J DeHa and M R Moore Norwich Conn—p 511
Nutrition Health and Disease I L Burnett Boston—p 515

New Orleans Medical and Surgical Journal

90 113 174 (Sept) 1937

- Introduction of Leprosy into Louisiana and the First Leper Hospitals T J Dimitry New Orleans—p 113
Delayed Operation for Acute Hematogenous Osteomyelitis H R Mahorner New Orleans—p 121
*Paratyphoid and Related Bacteria in Cutaneous and Subcutaneous Lesions G Fasting New Orleans—p 130
The Present Status of Serum Therapy in Pediatrics J H Hess Chicago—p 134
Transurethral Prostatectomy G J Thompson Rochester, Minn—p 142
Recent Advances in Anesthesia E B Tuohy Rochester Minn—p 145
Airway and Airways in Relation to General Anesthesia A M Caine New Orleans—p 148
Incidence of Congenital Heart Disease in the Charity Hospital of New Orleans J T Roberts Cleveland—p 153
Pregnancy in Active Sickle Cell Anemia W A Sodeman and G L Burch New Orleans—p 156

Paratyphoid and Related Bacteria in Cutaneous Lesions—A recent instance with fatal termination, caused by *Salmonella morganii* in association with nonhemolytic streptococci and staphylococci, led Fasting to a reexamination of several somewhat similar infections observed at the Charity Hospital since May 1936. Of the six cases reported, two patients died, a leg was amputated in one, infection of the hand with necrosis into the metacarpal bones occurred in one, a compound fracture was lanced in one, and in the remaining case there were extensive ulcerations on one leg. In one fatal case the complications were diabetes and a chronic bacillary dysentery. In the second fatal case a mixed infection followed an injury to the right knee. Marked arteriosclerosis was present in the case in which amputation of a leg was necessary. In the remaining three cases there were no obvious complicating constitutional factors. In the two fatal cases more than 1,000 cc of pus was evacuated from fluctuating masses in the thighs. In four instances the extraneous source of infection seemed evident. In one case the hematogenous route was fairly definite as the abscess formed in the thigh during the patient's stay in the hospital. In the sixth case the source remains doubtful. Cultures of the stools and urine failed to reveal these as possible sources of surface pollution. No difficulties were experienced in the isolation and culture of the bacilli in these cases. The micro organisms isolated had characteristics of the Morgan bacilli. Serologically two strains appear related to paratyphoid B and the aertrycke strains. The immunologic response to these organisms differs from common pyogenic infections. A greater interest in reporting clinical cases with similar infections will assist in a better classification and encourage the study of the immune processes involved.

Northwest Medicine, Seattle

36 295 332 (Sept.) 1937

- Future Medical Demands A C Crookall Seattle—p 295
The Management of the Vomiting Child F C Rodda Minneapolis—p 298
Cancer of the Breast in the Young L L Nunn Vancouver Wash—p 301
Carcinoma of the Pancreas S F Herrmann Tacoma Wash—p 304
Antisyphilitic Treatment in a Public Clinic S M Creswell and T J Porro Tacoma Wash—p 307
Regional Lelitis Report of Case with Perforation and Generalized Peritonitis M H Querna Spokane Wash—p 311
Frohlich's Syndrome (Dystrophia Adiposogenitalis) E A Pierce Portland Ore—p 312
Religion of Medicine A H Peacock Seattle—p 315

Oklahoma State Medical Assn Journal, McAlester

30 319 350 (Sept) 1937

- Why Look for Tuberculosis? C Puckett Oklahoma City—p 319
Tuberculosis of the Throat H J Evans Tulsa—p 322
Tuberculosis from the General Practitioner's Standpoint R M Shepard Tulsa—p 325
Renal Tuberculosis Clinical Study D W Branham Oklahoma City—p 328
Poliomyelitis B H Nicholson Oklahoma City—p 330
Orthopedic Management of Anterior Poliomyelitis D H O Donoghue Oklahoma City—p 334

Pennsylvania Medical Journal, Harrisburg

40 1017 1230 (Sept) 1937

- Genesis and Surgical Treatment of Essential Hypertension G Crile Cleveland—p 1017
Clinical and Pathologic Study of Acute Pulmonary Embolism and Thrombosis B L Crawford and H K Mohler Philadelphia—p 1020
Carcinoid Tumors of Stomach R M Entwisle Pittsburgh—p 1026
Three Major Complications of Acute Hemorrhagic Nephritis in Children Their Prevention and Treatment M I Rubin and M Rapoport Philadelphia—p 1029
Chemical Conjunctivitis of the New Born Its Cause Prevention and Treatment L P Glover Altoona—p 1035
Diagnosis and Treatment of Carcinoma of Esophagus H R Decker Pittsburgh—p 1038
Pulmonary Suppuration W E Burnett Philadelphia—p 1045
Acute Psychosis Associated with Coronary Thrombosis J B Wolffe and A Silverstein Philadelphia—p 1052
Classification of Blood Dyscrasias G J Kastlin Pittsburgh—p 1056
Lymphoblastomas and Case of Leukosarcoma M W Rubenstein Pittsburgh—p 1062
Wilms Tumor Report of Two Cases D P Ray Johnstown—p 1068
Brain Abscess Report of Cases J R Simpson Pittsburgh—p 1071

Philippine Islands Med Association Journal, Manila

17 445 510 (Aug) 1937

- Esophagus Diverticle and Its Roentgenologic Differential Diagnosis P S Chikamco Frankfort on Main Germany—p 445
Clinical Observations on Oxyperitoneum for Intestinal Tuberculosis K Uchikura H Ito and N Yabe Tokyo Japan—p 449
Choriorepithelioma Report of Six Recovered Cases Honoria Acosta Sison and J S Calang Manila—p 457
Bronchoscopy Minded A C Alcantara and G de Ocampo Manila—p 465

Public Health Reports, Washington, D C

52 1297 1328 (Sept 17) 1937

- Disabling Illness Among Industrial Employees in 1936 as Compared with Earlier Years D K Brundage—p 1297
Occupational Diseases Occurring in Factories and Workshops of Great Britain 1936 W M Gafar—p 1303
*Removal of Fluoride from Water E Elvove—p 1308
A New Ocular Micrometer for Use in Dust Counting Note R T Page—p 1315

Removal of Fluoride from Water—Elvove finds that fluoride can be removed from water with the aid of tricalcium phosphate, magnesium oxide or magnesium hydroxide. As magnesium oxide appears to be the least expensive, experiments have been conducted mostly with this substance. The fluoride-containing water (5 parts per million) to be treated was introduced into tall bottles. The quantity of the magnesium oxide used corresponded to one ounce per gallon of water in each bottle. The magnesium oxide and water were then actively agitated by means of a current of air, for about half an hour. After complete settling, about three fourths of the column of water was siphoned off replaced by a fresh supply of the fluoride containing water, and the process repeated. The removal of fluoride in the first three runs was 43 to 48 parts per million. The fifth to the seventeenth runs, in the case of the calcined magnesite yielded a composite sample that showed a fluoride removal of about 21 parts per million, while in the case of the light magnesium oxide the sixth to the seventeenth runs yielded a composite water that showed a fluoride removal of about 29 parts per million. With a composite water which had received one treatment, the residual fluoride in the mixture obtained from eleven runs with a second portion of magnesium oxide was reduced to about 1 part per million or less. The fluoride-removing power of the magnesium oxides however, was not yet completely exhausted. In the subsequent twenty-five runs with the magnesium oxide that had already been used in seventeen runs there was a further removal of fluoride, corresponding to an average of about 0.8 part per million in the case of the calcined magnesite and to about 1.8 parts per million in the case of the light magnesium oxide. Different grades of commercial magnesium oxide showed different degrees of fluoride-removing power. Although a commercial light magnesium oxide was found more efficient as a fluoride remover, per given weight, than a commercial calcined magnesite, its greater efficiency was not proportional to its higher cost. In the case of the calcined magnesite particularly, since it is used extensively in building operations and for various other purposes, it may be possible to utilize the material after its availability for removing fluoride has been exhausted and thus indirectly reduce the cost of treatment.

Review of Gastroenterology, New York

4 160 267 (Sept.) 1937

- Ways of Improving Gastro-Enterology W C Alvarez Rochester Minn —p 160
- Biochemical Changes in Organism Produced by Massive Intra Intestinal Hemorrhage T Christiansen, Copenhagen Denmark —p 166
- Surgery of the Stomach T H Russell New York —p 181
- Role of Duodenobiliary Drainage in Duodenal Ulcer and Biliary Tract Disease N W Elton Reading Pa —p 196
- Lymphopathia Venerea C F Martin Philadelphia —p 207
- Postanal Infections H Z Hibshman Philadelphia —p 213
- Appendicitis Obliterans Totalis Report of Case W B Christie Boston —p 215
- Mobile Duodenum R Upham New York —p 217
- Lymphosarcoma of Stomach with Pain Food Ease Rhythm of Three Months Duration Report of Case M Golob New York —p 228
- Chronic Interstitial Enteritis M Kraemer Newark, N J —p 239

Texas State Journal of Medicine, Fort Worth

33 345 408 (Sept.) 1937

- The Public Health Control of Syphilis T Farran Washington D C —p 351
- Essential Elements of a Public Health Program for Control of Syphilis J W Bass Dallas —p 354
- Treatment of Early Syphilis Public Health Control Measure E C Fox Dallas —p 359
- Diagnosis and Treatment of Late Syphilis L B Duggan Houston —p 363
- Importance of Standardized Laboratory Tests in Syphilis Control A G Schoch Dallas —p 366
- New Era in Treatment of Diabetes with Improved Insulin Compounds F H Kilgore and W S McDaniel Houston —p 369
- Aortic Aneurysm in Childhood Case Report with Some General Remarks on Desirability of Reporting Rare Cases J F Pulcher Galveston —p 373
- *Mental Disturbances Due to Bromide Intoxication Clinical Study of Twenty Three Cases T H Cheavens C F Carter and J S Bagnell Jr Dallas —p 375
- Amebiasis Its Diagnosis and Management W G Reddick and H E Wright Dallas —p 380
- Prevention Diagnosis and Treatment of Typhoid Fever N Simpson Waco —p 384
- Vicarious Menstruation Report of Unusual Case G A King Cuero —p 388
- The Dallas Syphilis and Venereal Disease Clinic A G Schoch and R W Manar Dallas —p 390

Mental Disturbances Due to Bromide Intoxication—

Since November 1933 Cheavens and his colleagues have made a study of all cases admitted to the hospital showing evidence of toxemia. The history of previous administration of bromide, as well as the presence of stupor, confusion, hallucinations and disorientation has been considered an indication for the laboratory determination of the blood bromide content. They found significant amounts of bromide in the blood of twenty-three patients in 555 consecutive admissions. It appears that in the more severe bromide intoxications the symptoms and signs of toxic delirium predominate to a sufficient extent to permit clinical recognition in a considerable number of cases. This is not true in the milder forms of bromide intoxication. Hallucinations were present in sixteen of the seventeen patients whose blood contained more than 150 mg of bromide per hundred cubic centimeters, confusion and disorientation occurred in fifteen. Six of these patients were found to be in some degree of stupor. In the group with less than 150 mg only one patient was found with hallucinations. The remainder presented essentially the symptomatology of the underlying illness for which the bromide was administered. As the patient with a severe bromide intoxication recovers, the symptomatology tends to change, with the evidence of the underlying illness again coming into prominence. This is particularly true when the underlying illness is a protracted or severe mental disturbance. Excluding the factor of the underlying illness, the symptoms in these cases are sufficiently uniform to suggest the possibility of a bromide intoxication, and with the laboratory determination of bromide in the blood there should be little trouble in selecting these cases from any group of mental disturbances. The neurologic signs did not show the same degree of uniformity, offering little help in making the diagnosis. Defects of speech, disturbances of gait and occasional pupillary disturbances were the most prominent conditions and these were found in only a small number of cases. One of the most serious objections to the continued administration of the bromides is that, once a toxemia is established, there is great likelihood of a prolonged illness in a mental hospital. In con-

trast to intoxications with other drugs, there is little doubt that the bromide patient will be ill for a much greater period. The most frequent source of bromides in the series continues to be the physician's prescription. Since the accumulation of bromide in the body occurs at the expense of the body chloride the treatment is logically based on the administration of chloride. In addition, the administration of large amounts of water assists in the excretion of bromides as well as tending to remedy the serious state of dehydration which many patients present. The withdrawal of all sedatives seems to be the best procedure. For the determination of bromide concentration about 15 cc of blood is collected by venous puncture, allowed to clot and centrifuged. Five cc of the clear serum is removed and added to 10 cc of water in a small flask, then 3 cc of a 20 per cent solution of trichloroacetic acid is added, shaken and allowed to stand for thirty minutes. This is filtered clear. Standards are prepared by adding to 10 cc amounts of water 5 cc of standards I and II (standard I contains 100 mg of sodium bromide to 100 cc of water and standard II contains 200 mg). To each standard 36 cc of a 0.5 per cent solution of gold chloride is added and to each cubic centimeter of the filtrate 0.2 cc. is added. The standard is set at 20 and compared, 100 (or 200 if standard II is used) times the reading of the standard divided by the reading of the unknown gives the amount of bromide expressed as sodium bromide in 100 cc of serum.

Virginia Medical Monthly, Richmond

64 299 364 (Sept.) 1937

- Prevalence and Incidence of Venereal Diseases in Richmond Va with Recommendations Lida J Usilton and R A Vonderlehr, Washington D C —p 299
- Venereal Disease Program in Richmond with Recommendations for Suggested Changes L E Burney and R A Vonderlehr, Washington D C —p 307
- Modern Aspects of Hematology J H Scherer Richmond —p 316
- *The Tobacco Heart H Golston Roanoke —p 319
- Prevention and Treatment of Fracture Deformities of Lower End of Radius A R Shands Jr and C R Duncan Durham N C —p 325
- Physiologic Disturbances of Erect Posture R J Main Richmond —p 330
- Some Observations in Eighty Cases of Head Injury T N Spessard Roanoke —p 334
- Acute Carbon Monoxide Asphyxia F F Davis Roanoke —p 337
- Studies on Oxyuriasis II Preliminary Note on Treatment with Tetra chloroethylene W H Wright J Bozicevich and J Rose Washington D C —p 339
- Effects of Intravenous Acetyl Beta Methylcholine on Paroxysmal Atrial Flutter N Blom and Grace Cashion Richmond —p 341
- The Relation of the Hospital to Medical Education and Medical Practice as Discussed in American Medicine W B Porter Richmond —p 342

The Tobacco Heart—Golston reviews the opinions of men who have studied the physical effects of smoking and cites two cases, one of a unifocal irritation and the other multifocal in its action on the cardiac muscle. From the literature he culled the following effects on circulation, resulting from tobacco: 1 A lowered cardiac efficiency, with a diminished power of the heart to stand strain, and in some cases the excitation of premature or arrhythmic rhythm. This was demonstrated by the two case histories presented. Young adults recover quickly with the cessation of tobacco. It is conceivable that the continued use of tobacco may cause the development of an organic heart. 2 Vasoconstriction, as a contributing cause of death in organic arterial disease. Smoking is not shown to be a cause of hypertension, although the blood pressure may be temporarily slightly elevated, and thus not necessarily forbidden. Coronary sclerosis and angina pectoris are not significant except in subjects showing cutaneous reaction to nicotine free tobacco or a toxic manifestation. 3 In peripheral vascular disease, such as thrombo-angiitis obliterans, Reynaud's disease and intermittent claudication, tobacco is forbidden. With these facts in mind the author quotes Cornwall: "The tobacco heart appears to be mostly a matter of symptoms and functional disturbance, but one must not forget that a functional condition continuously abused through abnormal physiology may result in permanent structural changes. Tobacco, therefore, must be considered a toxic agent and our guiding rule must be the reactions exhibited by our patients."

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

12 193 266 (Aug.) 1937

- Pellagra in African Children H C Trowell—p 193
Vitamin B₁ Deficiency in Infancy Critical Review M R Price—p 213
Variations in First Heart Sound and Auriculoventricular Conduction Time in Children with Rheumatic Fever J D Keith—p 217
Dysentery in Infancy I A Sabri M A Abboud and M Ali—p 225
Erythema Marginatum (Rheumaticum) C B Perry—p 233
Acute Myeloid Leukemia in One of Identical Twins C E Kellett—p 239
Prognosis in Rheumatoid Arthritis in Childhood T Colver—p 253

Prognosis in Rheumatoid Arthritis in Childhood—Colver presents an analysis of the prognosis of rheumatoid arthritis in sixty-nine children, two presented symptoms in the first year of life, fourteen in the third year with a maximal incidence in the preschool period between 2 and 5 years. Sixty per cent of the patients were girls. Follow-up enquiries were successful in forty-nine patients, of these, twelve are known to have died, eighteen are still active and nineteen are quiescent. The criteria of quiescence have been an absence of joint pain and tenderness for a period of not less than two years, and a blood sedimentation rate within normal limits. In no instance have symptoms recurred after a quiescent period of eighteen months. Each of the patients who died had first developed the condition when less than 5 years of age and, with one exception, each one had died within three years of the onset. The disease is thus most dangerous in the acute stages in young children. In the five fatal cases in the hospital in which a necropsy was performed there was a progressive emaciation and anemia, the patient gradually being reduced to an almost prostrate condition. In two cases there was a terminal streptococcal septicemia (hemolytic), in one a large renal calculus and heavy urinary infection. A fourth showed advanced amyloid disease and extreme pericardial adhesions. In the fifth the necropsy revealed nothing of note apart from extreme emaciation and moderate pericardial adhesions. Pneumonia has been cited as the cause of death in most of the patients who died elsewhere. With two exceptions, of the nineteen quiescent patients every one can earn a livelihood. With one exception every patient can walk. Seven of the nineteen have completely recovered and a further four patients have recovered to all intents and purposes but full passive movement in one or two joints occasions slight discomfort. Eight old cases show some crippling, but in only two of these is the ability to earn a livelihood lost. Of the thirty-seven surviving patients in not one has the duration of activity exceeded seven years. The disease thus appears to be self limited and in a given case one feels justified in predicting the cessation of activity within a maximal period. The duration of the active phase is one of the most important factors in estimating the prognosis and apparently three years of activity is the critical period. If after three years the disease is active, the risk of a fatal outcome is negligible but the chance of complete recovery of function has almost disappeared. In the patients who recovered completely the disease ran a relatively short course, never longer than three years (twenty months was the shortest duration) and the end results also show that, when the disease was active for more than three years recovery was not complete.

British Journal of Ophthalmology, London

21 465 528 (Sept.) 1937

- Five Unusual Cases of Proptosis R F Moore—p 465
William Porterfield M D R R James—p 472
Surgical Treatment of Chronic Glaucomatous Ocular Hypertension H Lagrange—p 477
*Use of Radon in Treatment of Metastatic Carcinoma of the Choroid P J Evans—p 496
Familial Macular Colobomas P J Evans—p 503
Eyelash in Anterior Chamber Following Removal of Intra Ocular Foreign Body W J B Riddell—p 506

Radon in Treatment of Carcinoma of Choroid—Evans describes a case of the unusual development of a metastatic carcinoma, secondary to that of the breast, in both eyes, appearing in one eye two months before its occurrence in the other. The first eye was excised, the fellow eye at that time being

normal. The second eye was treated by the application of radon seeds. In spite of evidence of further metastases the patient remains remarkably well in general condition and, although losing weight, is still active nearly five years after the original operation on the breast and still retains good vision twelve months after the incidence of choroidal metastasis in the remaining eye. The malignant condition of the eye treated by radon was confirmed in that the pathologic changes were exactly similar in appearance.

British Journal of Physical Medicine, London

12 89 114 (Sept.) 1937

- Some Clinical Results with Short Wave (6 Meters) Winifred Peacey—p 90
Infra Red Rays A P Cawadias—p 92
Electromedical Apparatus Its Character, Operation and Care IV Use of Current from the Mains for Electromedical Appliance L G H Sarsfield—p 97
Pistany Mud and Treatment of Rheumatic Disorders Analytic Biologic and Clinical Evidence H Doerner—p 100

British Medical Journal, London

2 403 438 (Aug. 28) 1937

- Heredity and Constitution in Etiology of Psychic Disorders E Kretschmer—p 403
Physiologic Bases of Nutrition S J Cowell—p 406
Role of Heterophoria in Binocular Disharmony with Especial Reference to Air Pilots P C Livingston—p 409
*Action of Meat Extracts and Related Substances as Gastric Stimulants in Man W R Boon—p 412
Treatment of Spastic Paralysis F H Mills—p 414

Meat Extracts as Gastric Stimulants—To establish the action of meat extracts and related substances on the gastric mucosa, Boon carried out a series of experiments on medical students. Various test meals were given to the subject on different days and the responses compared. The substances examined were beef powder, extracted beef, direct meat extract, commercial meat extract and sodium glutamate. The tests were performed on a fasting stomach. Beef powder, which represents whole meat, produces a marked secretion of hydrochloric acid over a long period. The watery extract is not so powerful, producing a secretion not much greater than that of gruel. Extracted beef is even less efficient. The most effective stimulant was the commercial meat extract. Sodium glutamate leaves the stomach so quickly that its effect on hydrochloric acid secretion is negligible. Beef powder delays the emptying time considerably as compared with gruel. Extracted beef and direct extract are not significantly different in their emptying times from that of gruel. Sodium glutamate makes the stomach empty very quickly. The extracted beef produced a very marked flow of mucus, in one case this was so great as to block the stomach tube. The secretion of pepsin is high when beef powder is administered. Of the substances examined it was the only one which stimulated the gastric mucosa to secrete pepsin. The other substances do not differ greatly from one another in their effect on secretion of pepsin, sodium glutamate being a possible exception. Following acute illnesses there is commonly a depression of gastric secretion, in such instances meat extracts, by stimulating the mucosa to an increased flow of hydrochloric acid, restore the gastric juice to normal.

Edinburgh Medical Journal

44 561 620 (Sept.) 1937

- *Pulmonary Tuberculosis in Children Agnes R Macgregor and W A Alexander—p 561
Primary Thrombosis of Axillary Vein M M Cruickshank—p 597
The Swedish System of State Medicine W A D Adamson—p 603

Pulmonary Tuberculosis in Children—Macgregor and Alexander show that in 333 cases of fatal tuberculosis of all forms examined after death during the period from 1922 to 1935 the disease was found to have originated in the thorax in 60 per cent, while, when the last six years of the period are considered separately, the primary thoracic infections rise to 69 per cent. Of the 200 cases of primary thoracic tuberculosis, approximately 80 per cent terminated with meningitis and so would in most instances appear in registrars' statistics as cases of nonpulmonary tuberculosis. The true frequency of primary tuberculous infection of the lungs in childhood should be clearly recognized, for in the majority of such cases the route of infection is the respiratory tract and the source

of infection a human one, often a member of the child's family. The development of the disease in the lungs following a first infection is described in three stages (1) the "primary complex," by which is understood the original focus in the lung, and the lesions produced in the regional lymph glands secondary to it, (2) localized extensions of the disease in the lung, arising from the primary complex and (3) more widespread disseminations of disease throughout the lungs, representing the advanced and often terminal stages of the process.

Glasgow Medical Journal

10 41 88 (Aug.) 1937

*Wassermann Reaction in Maternity Work C Mackay —p 41
Ectopic Kidney A M Clark —p 45

Wassermann Reaction in Maternity Work —Mackay reports the results obtained in the routine examination of 1,000 maternity cases, in which the maternal blood and the fetal placental blood were submitted to the Wassermann reaction. Not one of the nineteen positive cases gave a history indicative of syphilis, ten patients made no complaint of any kind, two complained of varicose veins, and in the others the complaint consisted of pleuritic pain, abdominal pain, vaginal discharge and symptoms which might well be associated with cystitis and with a mild albuminuria, one gave a history of slight repeated attacks of antepartum hemorrhage. A year after the pregnancy, twelve of the total of nineteen mothers whose blood had given a positive reaction were again seen. On repetition of the test, in all instances the reaction was still positive. Nine children were alive and reported to be well, three had died. Of the twelve mothers interviewed, two had not attended the venereal clinic to which they had been directed. Data are given which are roughly in agreement with those of syphilis in the whole population and show that there has been a remarkable fall in the incidence of syphilis in maternity patients. Of the nineteen cases nine showed a positive reaction in the child. There was no instance of a positive reaction in the child and a negative reaction in the mother. In applying the Wassermann test as a routine in maternity work it is of much greater value to submit the maternal blood to the test than the fetal (placental) blood.

Indian Medical Gazette, Calcutta

72 457 520 (Aug.) 1937

- *Surgical Treatment of Nonparalytic Squint E O Kirwan —p 457
- Comparative Study of Action of Atabrine and Atabrine Plasmochin Combination on Indian Strains of Malaria Part II R N Chopra R T M Hayter and B Sen —p 458
- *Stable Solution of Antimony for Treatment of Kala Azar L Everard Napier R N Chaudhuri and M N Rai Chaudhuri —p 462
- Insulin Anaphylaxis J P Bose —p 465
- Letzko's Operation as Treatment for the Failed Forceps Case J F Shepherd —p 466
- Treatment of Plague Cases with Convalescent Human Serum J N Norman Walker —p 469
- Study of Thirty Nine Cases of Auricular Fibrillation T K Raman —p 473
- Arsenic in Human Tissues and Excretes K N Bagchi and H D Ganguly —p 477

Surgical Treatment of Nonparalytic Squint—Kirwan states that in Bengal extreme degrees of concomitant squint, both convergent and divergent, are very common. The convergent varieties can always be cured and in the case of divergent ones excellent results can be obtained provided the vision is good in each eye. In eleven of the twelve cases that he records he obtained good results by a single operation on the muscle of one eye. The more usual types of surgical treatment carried out in the eye infirmary consist of (1) resection with advancement combined with recession of the opposing muscle, (2) resection with advancement combined with partial tenotomy and (3) simple advancement or simple recession in moderate degrees of squint.

Stable Solution of Antimony for Treatment of Kala-Azar—Napier and his associates have used a pentavalent compound of antimony, containing 20 mg of antimony (metal) in 1 cc. of solution, in the treatment of ten cases of kala-azar. These were all Indian males. The diagnosis was made in every case by the finding of the parasite, usually by spleen puncture but in one case by liver puncture. The cases were not selected, except that one patient with pneumonia and kala-azar and another with pulmonary tuberculosis and kala-azar

were excluded, otherwise, consecutive previously untreated persons admitted to the Indian male wards were treated with this drug. All the injections were given intramuscularly. The total amount of antimony given varied from 0.96 to 1.74 Gm., administered in from eight to ten injections (daily or on alternate days). In no case did a high fever continue for more than nine days. The spleen was markedly reduced and in no case was it more than 2 inches below the costal margin at the time of discharge. The weight increased during the patients' stay in the hospital and subsequent to the commencement of treatment the average increase was 5 pounds (2.2 Kg). Only one patient complained of any pain after the injection and in his case the pain lasted only an hour or so. No abscess formation or local induration was noted in any case.

Journal Obst & Gynaec of Brit Empire, Manchester

44 625-820 (Aug.) 1937

- *The Precancerous Cervix G I Strachan —p 625
- *Operation of Extroversion of Ovaries for Functional Amenorrhoea Especially of the Secondary Type K V Bailey —p 637
- Treatment of Varicose Veins in Pregnancy E Solomons —p 650
- Study of Immediate and Remote Effects of Pregnancy on Diseases of Heart F Charlotte Naish —p 659
- Advanced Extra Uterine Pregnancy F Roques and W R Winterton —p 687
- Shoulder Delivery by Breech Presentation J L'Esset —p 696
- Dysgerminoma Removed During Pregnancy F Stabler with pathologic description by J G Thomson —p 705
- Resorption and Action of Follicular Hormone Rubbed into the Skin A A Loeser —p 710
- Endometrioma of Umbilicus Two Cases C K Vartan —p 715
- Infarct of Brain Complicating Abortion Case R K Ford —p 718
- Spontaneous Rupture of Uterus Following Cesarean Section Case R K Ford —p 721
- Locked Twins Case P G Preston —p 723
- Radiograms Taken During Labor from Its Onset Until the Head Is Born Indicating Position of Anterior and Posterior Shoulders. N A Purandare —p 726
- Pregnancy After Hematocolpos W N Searle —p 729
- Nystagmus Associated with Hyperemesis Gravidarum J B Dawson —p 731
- Unusual Complication of External Cephalic Version J D Flew —p 733
- Neglected Shoulder Presentation Decapitation by the Blond Heidler Instrument C M Marshall —p 735
- Results in Treatment of Malignant Tumors of Female Sexual Organs in Gynecologic Clinic of University at Amsterdam in the Years 1913 up to and Including 1931 W P Plate —p 737

The Precancerous Cervix—Strachan bases his remarks on the clinical and histologic investigation of several hundred cervixes removed during the last ten years, mainly for chronic inflammatory lesions. In a small proportion of these cases early carcinoma was unexpectedly found, while the examination of a further 400 cases of frank cervical carcinoma has been of corroborative value. Leukoplakia of the vulva is generally regarded as precancerous in that epithelioma supervenes in a large proportion of such cases if left untreated. The main clinical precancerous cervical lesion is produced by the various effects of chronic infection usually secondary to obstetric trauma. It is common knowledge that with a hypertrophied, everted and eroded cervix many annoying gynecologic symptoms may occur but that carcinoma may not develop, while in a cervix with quite a small eroded area and in about 5 per cent of cases in such an area apart from obstetric trauma, carcinoma may occur. Leukoplakia of the cervix has the same relation to cancer formation as leukoplakia of the vulva or tongue. The main lesion of connective tissue which would appear to predispose to the formation of carcinoma in the cervix is subepithelial hyaline degeneration, and this is seen only in old standing cases. A suggestive feature is a separated clump of surface epithelial cells in the connective tissue. There are several others. One of the most important of these is the type of interpapillary epithelial downgrowths. The main precancerous signs are those of overactivity of the cell columns or of the individual cells, and this is not indicated by mere multiplication of layers which is often seen in procidentia in which carcinoma is rare. The main change that the author has been able to observe which might be regarded as precancerous is a tendency for the cervical glands to lose their racemose appearance and to revert to a simpler tubular type. This would represent a degree of metaplasia of the gland as a whole and not necessarily of the epithelium lining it. The main changes that would indicate a tendency toward carcinoma formation are to be found in slight variations in the normal structure or relations of a limited

number of cells, if such variations are marked and if the condition of metaplasia so produced involves a large proportion of the epithelial cells, a condition of early carcinoma is present. Very careful examination is thus called for, often of several sections of a particular specimen, in estimating the presence of such precancerous changes, and the first thing to be noted is the general appearance of the constituent cells. In the nonmalignant squamous epithelial cell the cytoplasm is evenly stained, but in a carcinomatous cell the stain is absorbed quite unevenly, producing a mottled appearance, and this condition is widespread in an area of carcinoma. Inequality of staining indicates a tendency to the formation of carcinoma. If mitotic figures are seen in a number of cells, it indicates the actual presence of carcinoma, if the process is limited to a cell or two with surrounding and intervening normal cells, it would indicate a precarcinomatous disposition. Actual penetration of the basement membrane is a definite sign of malignant manifestation. It is emphasized that a feature of precancerous changes is that they are limited to a few isolated cells, and it is further emphasized that in a particular cell the changes should be few. Thus, if a cell shows nuclear mitosis, hyperchromatism and increased relative and absolute size of the nucleus and nucleolus, the probability is that it is already carcinomatous, and further search will probably confirm this by demonstrating similar changes in adjacent cells. If one can identify cervical cellular changes which are not yet carcinomatous but are likely to proceed in that direction, a minor operation, such as amputation of the cervix, would save the patient from the terrors of carcinoma and thus represent prophylactic gynecology in the best sense.

Extroversion of Ovaries for Functional Amenorrhea
—Bailey performed extroversion of the ovaries in seventeen cases of secondary or functional amenorrhea, to which has been added a minor degree of endocrine therapy. The most potent extract used in this respect has been the anterior pituitary-like gonadotropic principle, small doses (about six injections of 200 rat units) of which have been given in some cases. Thirteen patients showed a successful result by the establishment of regular menstruation immediately following operation. There were four failures. There were three patients who were treated by modern endocrine therapy, as advocated by Kaufmann, prior to operation with no result. While recognizing the inadvisability of subjecting young women suffering from developmental relative or secondary amenorrhea to laparotomy without a thorough trial of treatment along general and endocrine lines, the author believes that the operation of extroversion of the ovaries is justifiable in the following cases: 1. When endocrine therapy alone fails to restore regular menstruation or something approaching this state. 2. When a multicystic change of the ovaries can be detected clinically and the progressive nature of the lesion renders the outlook less and less favorable. 3. When time itself fails to rectify menstrual function and particularly when it becomes worse as time goes on. 4. When the nervous system shows signs of derogatory disorder in consequence of the fact of amenorrhea.

Journal of State Medicine, London

45 497 558 (Sept.) 1937

- Treatment of Tuberculosis of Lymphatic Glands W G Sutcliffe—p 497
Prevention of Nasal and Aural Infections in Childhood W Ibbotson—p 504
Population Problems E W C Thomas—p 514
Some Etiologic Factors in Chronic Arthritis and Allied Conditions S Miller—p 522
Rheumatism: Trauma or Infection D H Collins—p 529
Some Neglected Aspects of Physical Training and Recreation A McKenzie—p 536
Some Problems of Smaller Authorities in Rehousing of Overcrowded Families N E Chadwick—p 545
Treatment of Abdominal Tuberculosis A Moncrieff—p 551

Journal of Tropical Medicine and Hygiene, London

40 185 196 (Aug 16) 1937

- The Rhamnose Test A Castellani—p 185
Pates Medicinales and Quinquina Treatment of Kang Hsi Emperor of China (1662-1723) J W W Stephens—p 187

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- Biochemical Characters and Agglutinative Reactions of Metadysenteric Bacilli A Castellani and M Douglas—p 197
Filarial Periodicity E H Hinman—p 200

Lancet, London

2 421 478 (Aug 21) 1937

- *Virus in Etiology of Rheumatic Diseases G H Eagles P R Evans A G T Fisher and J D Keith—p 421
Hypospadias: Its Effects, Symptoms and Treatment. Review of 101 Cases A R Thompson—p 429
*Sulfhemoglobinemia: Its Cause and Prevention with Especial Reference to Treatment with Sulfanilamide H E Archer and G Discombe—p 432
Fatal Hematemesis and Melena L D W Scott—p 435
Theophylline Ethylenediamine in Cheyne Stokes Respiration O A S Marais and J McMichael—p 437
Observations on Response of Pulse Rate to Exercise in Healthy Men A B Hill H E Magee and E Major—p 441
Fluorescence Microscopy on Living Virus with Oblique Incident Illumination F Himmelweit—p 444

Virus in Etiology of Rheumatic Diseases—Eagles and his associates prepared suspensions of particles bearing a close resemblance to elementary bodies of known virus infections from a variety of materials from patients with acute rheumatic fever, rheumatoid arthritis and chorea. Nonrheumatic suspensions bear a close resemblance to those obtained from true rheumatic sources and to undisputed virus elementary bodies of comparable size. Pericardial, pleural and joint exudates contain the particles of uniform size and density to a much greater degree than other materials from acute rheumatism and rheumatoid arthritis or from nonrheumatic materials. Since these particles are not confined to rheumatic infection, agglutination tests have been used to test for their relation to rheumatism. The suspensions obtained from pleural, pericardial and joint exudates are specifically agglutinated, thus lending support to the observation that the preponderance of particles of regular size and density observed in these may be true virus bodies. In only one instance was a suspension from synovial membrane from rheumatoid arthritis specifically agglutinated. Fibrin from acute pericarditis, on the other hand, yielded suspensions that were specifically agglutinated probably by reason of the exudate present. The control suspensions, which were selected to cover a wide range, were in no case agglutinated by any of the known positive serums. When the agglutination results are studied, it is clear that not only are suitable suspensions from acute rheumatic fever, rheumatoid arthritis and chorea agglutinated by the serums of patients suffering from the particular disease from which the suspension was prepared but also considerable cross agglutination appears within the group of rheumatic diseases. From these results it would seem that these diseases are closely related. While it cannot be said that their etiology is identical, it is at least probable that they possess some common significant factor which is reflected in serologic tests. The conception of rheumatic fever and rheumatoid arthritis as closely related diseases is supported by other investigators. The common factor need not be of etiologic significance but may be some nonspecific cause such as pyrexia or an increased erythrocyte sedimentation rate. The series of cases examined is sufficiently comprehensive to show that the agglutination titer does not run parallel with either of these factors. Increased erythrocyte sedimentation is not responsible for the agglutination. Until these suspensions are proved to be infective, the possible nature of the reaction must be considered particularly in the light of certain serologic observations made in other diseases. In view of a virus hypothesis for rheumatism, the possibility of a reaction between the patient's own serum and exudates was considered, particularly in the light of the observations of Hughes (1933) on yellow fever. Dilutions of serum from a patient gravely ill with rheumatic fever in the acute stage were set up in hanging drops with his own pleural exudate after it had been centrifugated for one hour at 14,000 revolutions per minute. As a result of this centrifugation a suspension of typical rheumatic bodies had been obtained which was specifically agglutinated by the patient's own serum as well as by other acute rheumatic serums which showed at the same time definite agglutination with other acute rheumatic suspensions. The hanging drop preparations of serum dilutions and supernatant portion of the pleural exudate remained perfectly clear when examined microscopically over five successive days. No trace of precipitation was found with other known positive serums and this pleural exudate.

Cause and Prevention of Sulfhemoglobinemia—Archer and Discombe believe that any treatment which helps the formation of a liquid stool may be expected to accelerate the formation

of sulfhemoglobinemia. The intracorpuseular sulfhemoglobinemia, associated with the administration of drugs derived from aniline, results from the combination of hemoglobin with the hydrogen sulfide absorbed from the intestinal tract, this reaction is catalyzed by the drug circulating in the blood. The normal absorption of protein digestion products in the small intestine is diminished by purgation, causing increased putrefaction in the colon and a production of hydrogen sulfide much in excess of normal. Saline cathartics are most active in this process because their osmotic action maintains the contents of the colon in a semifluid state, thus accelerating putrefaction. The development of sulfhemoglobinemia can be prevented or considerably delayed by keeping the colon free from food residues by (1) cleansing the colon with enemas before treatment is started, if purgatives have been given previously, (2) giving the patient a low residue diet, of adequate caloric value, containing few eggs, and (3) giving large, regular doses of liquid petrolatum. In treatment with sulfanilamide, it is important to examine spectroscopically the blood of all patients who develop cyanosis, for occasionally the cyanosis is due not to the presence of abnormal pigments in the blood but to the development of some other organic disease, such as pneumonia.

Medical Journal of Australia, Sydney

2 281 330 (Aug. 21) 1937

⁴ Q Fever A New Fever Entity. Clinical Features, Diagnosis and Laboratory Investigation. E. H. Derrick—p. 281
Experimental Studies on Virus of 'Q' Fever. F. M. Burnet and Mavis Freeman—p. 299

Functional Pathology of Anemia. C. G. Lambie—p. 305

2 331 370 (Aug. 28) 1937

Epilepsy as Symptom of Organic Lesions of the Brain. E. G. Robertson—p. 331

Functional Pathology of Anemia. II. Transport and Elimination of Carbon Dioxide. C. G. Lambie—p. 341

Dyschromia of Face. Report of Three Cases. E. Rosanove—p. 348
Congenital Solitary Kidney. Report of Three Cases. D. C. Trainor—p. 352

A New Fever Entity—In August 1935 the occurrence of a number of cases of fever among workers in a large meat-works in Brisbane was brought to the notice of the health director, who directed Derrick to investigate the matter. It appeared that the cases which incited the inquiry had begun to occur early in 1933. The fever continued for from seven to twenty-four days. The most striking feature was the uniform failure of blood cultures and agglutination tests to throw light on the diagnosis. Typhus, undulant fever, aberrant typhoid, paratyphoid and leptospirosis have been ruled out by negative results to tests. Guinea-pigs acquired the disease readily by injection of blood or urine from a patient. Their subsequent immunity has rendered it possible to prove that this (Q fever) is a pathologic and a clinical entity. As no organism could be seen in or cultivated from human or guinea-pig material, it appeared likely that the infecting agent was a virus. Infected guinea-pig liver was sent to Burnet of Melbourne, who, transferring the infection to mice, was successful in discovering Rickettsia bodies in their spleens. Cases of fever of doubtful cause were found to occur from time to time in and around Brisbane apart from meat workers. When these were investigated, some of them proved to be due to Q fever. The nine cases described include five from the abattoir, two from other parts of Brisbane, one from Gympie and one from Pomona. In case 6 the incubation period could be deduced as fifteen days or less. The onset of the illness in all cases was acute. Within a few days of the first premonitory symptoms the victims were in bed quite ill. The first complaints were usually malaise, anorexia, headache, pains in the back and limbs and feverishness. As the illness developed, the symptoms became more severe and the general condition of the patient worse. The headache was troublesome and persistent and often interfered with sleep. The face was flushed or pale, the eyes were closed and the tongue was coated. In the more severe infections the patient became drowsy, even stuporous, and passed on into a typhoid state. The symptoms gradually abated as the temperature fell. With patients having the shorter course the improvement, once it started, was rapid. None of the cases have been fatal. The epidemiology is obscure. There is no obvious

relation to the season. It is suspected that there may be a reservoir of infection in some animal with a blood sucking parasite as a vector, but attempts to find such a reservoir have failed.

Practitioner, London

129 213 312 (Sept.) 1937

The Psychology of Motoring. M. Culpin—p. 213

Vision and the Motorist. N. B. Harman—p. 218

Fume Poisoning and Motoring. W. Willcox—p. 225

Alcohol and the Motorist. A. Baldie—p. 232

Common Injuries and Accidents Due to Motoring. A. M. A. Moore—p. 238

Administration of Fluids. H. L. Marriott and A. Beckwith—p. 240

Orthopedic Surgery in Treatment of Rheumatism and Rheumatic Arthritis. G. O. Tippet—p. 271

*Phrenic Paralysis in Treatment of Certain Thoracic Complications and Subdiaphragmatic Infection. R. Coope and H. Reid—p. 279

Urinary Disease Associated with Nervous Disease. A. R. Thompson—p. 284

Diet in Health and Disease. III. Dispensing Special Diets. Margery Abrahams—p. 291

Phrenic Paralysis and Thoracic Complications in Subdiaphragmatic Infection—Coope and Reid point out that the earliest manifestation of thoracic complications of a subphrenic infection is usually a plastic pleuritis. In this way the undersurface of the lower lobe of the lung is fixed to the diaphragm. If the infection is more intense, especially if it affects a wide area under the diaphragm, there may be a rapid spread through the lymphatic glands to a considerable area of the pleura, with the development of a pleuritic effusion. An empyema may thus form and remain localized and encysted. After surgical drainage of a subphrenic abscess, fibrinous adhesions formed in the thorax may be broken down when the diaphragm descends again to its normal position. If the empyema is encysted in plastic pleuritic exudate, the infection may invade the lung and produce either pneumonitis or abscess of the lung, the pus may find its way into a bronchus, when it may be coughed up. In cases of long standing there may be actual necrosis of diaphragmatic tissue, with perforation of the diaphragm, and an hour glass type of abscess above and below the diaphragm. Effective treatment will therefore involve a careful estimate of the pathologic picture—of what has happened during the stage of active inflammation and also what is likely to happen as the result of the processes of recovery and repair. A case is reported in which the crippling effect of scarring following a subphrenic inflammation was dealt with by crushing the phrenic nerve and so paralyzing one half of the diaphragm.

South African Medical Journal, Cape Town

11 525 556 (Aug. 14) 1937

Brocail a New Suture Material. P. R. Michael—p. 527

Epidemiology. A. J. Orenstein—p. 529

Polymyositis. Experimental and Therapeutic Aspects. V. Brink—p. 536

Opportunities for Better Service. E. W. Ingle—p. 538

Tubercle, London

18 529 576 (Sept.) 1937

Bovine Tuberculosis in Man. A. S. Griffith—p. 529

How Long Should Collapse Therapy Be Delayed? H. M. Davies—p. 541

Journal of Oriental Med., Dairen, S. Manchuria

27 18 (July) 1937

Gastritis Due to Diphtheria Toxin. T. Yokoyama—p. 1

The So-Called Hairline. J. Iio, T. Ota and K. Mase—p. 2

Experimental Studies on Arteriosclerosis. Origin of Arteriosclerosis Through Manganese Salts. Kan Jin Nan—p. 3

The Form of the Eyelids and of the Eye Slit in the Chinese. Y. Funakawa and H. Isayama—p. 4

Method of Treatment of Premature Children. Action of Hormones in Premature Children. T. Iino—p. 6

Smallpox and Vaccination in Region of Antung in Manchuria. T. Nakashima and Y. Shikano—p. 7

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Study of Glanders. Report I. Diagnostic Value of Serum Reaction in Glanders of Humans. K. Mori—p. 10

Culture of Ducrey Bacillus. S. Kobayashi—p. 11

Pellagra in Manchuria. Three Cases. Y. Idei, T. Radon and C. Kobayashi—p. 18

Postparalysis After Vaccination Against Rabies. Case. Y. Idei—p. 1

Study of Bacterial Catalase Especially that of Typhoid and Paratyphoid Bacilli. S. Hukuda—p. 21

Bull et Mem de la Soc Med des Hôpitaux de Paris

53 1054 1172 (July 19) 1937 Partial Index

- Therapy of a Paraplegia in a Child with Syndrome of Klippel Feil R Franquet—p 1054
Acute Hemolytic Icterus Caused by Carcinomatosis of Bone Marrow Secondary to Cancer of Stomach J Caroli and H Lavergne—p 1056
Hemorrhagic Form of Megacaryocytic Aleukemic Myelosis Florentin J Girard and D Picard—p 1061
Hemorrhagic Complications of Melitococcosis J Olmer M Audier and E Gascard—p 1069
Therapeutic Intoxication by Dimetrocresol Cataract Followed by Glaucoma Pathogenic Considerations Gilbert Dreyfus and R Onfray—p 1073
Primary Porphyria with Paralytic Aspects Case R Boulon R Garcin Neveu and Orlan—p 1079
*Continuous Murmur of Superior Vena Cava C Lian—p 1088
B Avitaminosis of Polynephritic Form Case E Lesne C Launay and Roge—p 1104
*Continuous Venous Murmur of Right Interscapulo-vertebral Space C Lian—p 1100

Continuous Murmur of Superior Vena Cava—Lian states that the continuous murmurs that are perceptible at the neck have been known since the description of Laennec, their origin in the jugular vein had been established by Hope and particularly by Aran. In this report he discusses continuous murmurs of the superior vena cava. After reporting three cases he describes the characteristics of the murmur, its etiology and mechanism and the differential diagnosis. He shows that it is a continuous murmur with systolic reinforcement, the main focus of which is located in the second and third intercostal spaces, two or three fingerbreadths away from the right side of the sternum. Its intensity is great. Its timbre is generally sharp, occasionally soft but rarely musical. The intensity and the timbre may vary in the course of the development. The author mentions five factors which he thinks prove that the curious murmur originates in the superior vena cava: (1) the continuous character analogous to the murmurs of the jugular vein, (2) the maximal localization in the region of the projection of the superior vena cava, (3) the considerable propagation in the right side of the thorax, the weak propagation in the left side of the thorax and the minimal and inconstant propagation in the neck, (4) the fact that this peculiar murmur is encountered in three cases, two of which presented signs of compression of the superior vena cava and (5) the disappearance of the murmur in a case in which the disappearance coincided with a period of amelioration of the signs of compression of the superior vena cava. Discussing the etiology and the mechanism of the murmur, the author points out that it is encountered chiefly in syphilitic patients who have an aortitis with mediastinitis or aneurysm compressing the superior vena cava. In the differential diagnosis of the continuous murmur of the superior vena cava, the author mentions the continuous murmurs due to persistence of the arterial canal, to the communication between the aorta and the superior vena cava, to propagation from the arteriovenous aneurysms of the members, to propagation of the continuous hyperthyroid murmur and to cirrhosis of Curvillier-Baumgarten. He mentions the continuous murmur of the interscapulo-vertebral space, which he describes in the subsequent report.

Continuous Venous Murmurs of Right Interscapulo-vertebral Space—Lian describes a continuous venous murmur of the right interscapulo-vertebral space in two cases. In the first case there exists a small hydatid cyst in the immediate neighborhood of the continuous murmur. It is therefore plausible to admit that the murmur is due to the compression of a branch of the posterior pulmonary vein arising from the right hilus. In the second case there exists a small abnormal shadow in contact with the origin of the right bronchus. There is justification for thinking that it results in a compression of the pulmonary vein, perhaps by a tracheobronchial adenopathy. Several intracutaneous tests with tuberculin were negative. The author concludes that these two observations together with the three observations of the preceding report about the continuous murmur of the superior vena cava show that there exist thoracic continuous venous murmurs which are distinct from the single analogous thoracic murmur already known, the continuous murmur of the persistence of the arterial canal.

Presse Médicale, Paris

45 1355 1370 (Sept 25) 1937

- *Destruction of Pathogenic Micro-Organisms in Drinking Water by Means of Tartaric Acid With or Without Neutralization H Violle—p 1355
*Paralysis of Dental Origin Attempt at Explanation of Peripheral Facial Paralysis Improperly Called A Frigore Two Cases P Panneton—p 1356
Epidemiologic Importance of Cutaneous Reactions with Tuberculin in Adults R L Debenedetti and E Balgaries—p 1359

Destruction of Micro-Organisms in Drinking Water by Means of Tartaric Acid—Violle found that the bacillus of typhoid (Eberth type) is killed after a contact of from twenty to thirty minutes with a 0.35 per cent solution of tartaric acid, that the bacillus of dysentery (Shiga type) is killed after a contact of two hours with the same solution and that the bacillus of cholera (agglutinable vibrio of Koch) is killed after a contact of ten minutes with the 0.35 per cent or even a 0.25 per cent solution of tartaric acid. Thus a contact of two hours' duration with the tartaric acid solution will destroy all bacilli that are the cause of the three serious infectious diseases of the intestinal tract. It is simple to overcome the acid taste of the drinking water to which tartaric acid has been added. Neutralization is readily effected by adding approximately the same amount of sodium bicarbonate (35 Gm.). The author thinks that this method of treating drinking water with tartaric acid will be helpful in checking typhoid, bacterial dysentery and cholera.

Peripheral Facial Paralysis—Panneton observed two cases of facial paralysis of the peripheral type, which developed after dental extractions. One of the extracted teeth was an upper and the other a lower premolar. The author investigated how the extraction of a tooth may lead to facial paralysis, that is, what relation exists between the facial nerve in its passage through the fallopian aqueduct and the upper and lower premolar regions of the same side. He investigated four possible connections: by contact, by vascular channels, by lymphatic channels and by nervous channels. After ruling out the connections by direct contact and by the vascular and lymphatic passages, he studied the nervous connections. He reaches the following conclusions: 1. In cases of facial paralysis of dental origin, the point of transmission is found at the level of the two superficial petrosal nerves, the large and the small, both of which enter the geniculate ganglion in contact with the facial nerve. 2. A large number and perhaps the majority of facial paralyses of the peripheral type, which are generally referred to as "a frigore," are of sympathetic origin. 3. These forms of paralysis are dependent on deep facial lesions. 4. The peripheral facial paralyses are most of the time, if not always, the result of circulatory disturbances in the vasa nervorum of the seventh cranial nerve, particularly in the region of the geniculate ganglion, and thus as a result of a physiologic lesion of the cephalic sympathetic.

Progres Medical, Paris

Sept 25 1937 (No 39) Pp 1338 1368

- *Frequency of Radial Pulse Before During and After Blood Transfusion M Fourrestier—p 1345
Critical Remarks on Hereditary Syphilis M Perrault—p 1349

Radial Pulse in Blood Transfusion—Fourrestier points out that in a previous report (see also THE JOURNAL, September 11, p 913), he discussed the importance of the slackening of the radial pulse during and after blood transfusions that are given in case of hemorrhages. In this paper he discusses the importance of the radial pulse in blood transfusions that are considered as true "hemotherapy", that is, those transfusions which are given without the urgency of hemorrhage. In this type of transfusion the radial pulse must remain practically unchanged from the beginning to the end of the intervention or, after a temporary acceleration, it must revert to the initial rhythm ten minutes after the end of the transfusion. In some cases a mild slackening of the radial pulse may even be observed. This is always a favorable sign and indicates that the transfusion is well tolerated. However, if there is a permanent acceleration of the pulse it may be caused by an imperfect technic of transfusion, or the transfusion may have been too abundant. In certain anemic patients it is necessary to avoid quantities in excess of 200 cc. In these patients it is better to repeat the transfusions than to inject one large quantity of

blood In case a reaction of intolerance is feared, the only efficacious treatment should be resorted to, namely, the injection of morphine, which, if there is the least doubt about the patient's susceptibility for such a reaction, should be given as a prophylactic before the transfusion

Schweizerische medizinische Wochenschrift, Basel

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Dinitrophenol Cataract in Switzerland A Vogt—p 873

Constitution Endocrine Constitution and Tuberculosis O M Mistal—p 874

*Vitamin C and Heat Regulation F Hasselbach—p 877

Hyptogenesis of Axis Myopia J Wertheimer—p 879

Vitamin C and Heat Regulation—Hasselbach shows that there are connections between increased temperatures and the consumption of vitamin C During fever the vitamin C requirements are increased In scurvy and in C hypovitaminosis there exists an instability in the heat regulation which can be counteracted by the administration of vitamin C If large amounts of cevitamic acid are administered, the decline in fever is critical In patients with pulmonary tuberculosis, the administration of vitamin C may effect an improvement of the toxic condition and with this a reduction in temperature Moreover, clinical observations on convalescent patients seem to indicate an improvement in the vasomotor and capillary functions, two factors that are important for normal heat regulation

Giornale di Batteriologia e Immunologia, Turin

19 145 288 (Aug) 1937 Partial Index

Diffusion of Tubercle Bacilli (Bovine Strain) from Inflammatory Foci of Various Natures L Michelazzi—p 145

Subungual Contents of Patients Suffering from Pulmonary Tuberculosis in Sanatoriums in Relation to Diffusion of Tubercle Bacilli L Trosarelli—p 156

*V₁ Antigen of Eberthella Typhi U di Aichelburg and L Montagnini—p 190

Antigen Properties of TAB and TABCh Multiple Formulated Vaccines E Satta—p 209

V₁ Antigen of Typhoid Bacilli E Satta—p 227

Virulent Antigen of Eberthella Typhi—Aichelburg and Montagnini studied thirty-five strains of Eberthella typhi isolated from the feces or the blood of patients suffering from typhoid The group included recently isolated and old strains Researches were also made on twenty-eight specimens of blood serum of the patients Thirty-four strains, in the group of thirty-five, contained the Felix-Pitt "V₁" (virulent) antigen Thirty strains were agglutinated by blood serum which contained the specific O antibody Twenty-nine strains of this group and four of the five which were not agglutinated by the O antibody were agglutinated by blood serum containing the V₁ antibody In the majority of the blood serums the agglutinating titer of V₁ and O antibodies was high Intraperitoneal inoculation of suspensions containing any of the twenty-nine V₁ strains to guinea-pigs killed the animals In twenty-five out of a group of twenty-eight specimens of blood serum of patients suffering from typhoid or of convalescents the content of V₁ antibodies was low A relation between the presence and amount of V₁ antibodies in the blood serum of the patients and the clinical evolution of the disease cannot be established The antigen-antibody reaction between strains of Eberthella typhi and the O antibody takes place but is invisible It is possible to have agglutination, however, by using a large amount of O antibody The variations S-R (smooth-rough) of typhoid bacilli induce no changes in the agglutinability of the bacilli by V₁ antibodies The V₁ antigen lasts for years in the strains of Eberthella typhi which are preserved on common cultural mediums The strains of Eberthella typhi which contain V₁ antigen are extremely sensitive to the action of antityphoid bacteriophage The authors say that some of their results conflict with those reported in the literature, especially by Felix, Pitt and Kauffmann According to the authors there is no relation between the presence of V₁ antigen in Eberthella typhi and the lack of agglutination of the organism by O specific antibodies The existence of reversible gradual transformations of Eberthella typhi into strains having and losing, respectively, V₁ antigen and agglutinating properties for O antibody has not been proved Old age has no influence on the agglutinating properties of V₁ antigen, provided Eberthella typhi is preserved in simple cultural mediums Most of the strains that contain V₁ antigen are virulent to white rats Their virulence to man has not as yet been established V₁ antigen does not prevent

binding between O antigen and O antibody The authors conclude that the chapter of serology of Eberthella typhi is waiting for researches, especially because of the importance of V₁ antigen in immunization against typhoid

Minerva Medica, Turin

2 265 288 (Sept 16) 1937

Bacteriology Individuality of Enterococcus and Its Importance in Human

Pathology L D'Antona—p 265

Thrombocytopenic Hemorrhagic Diathesis in Adult Effects of Splenectomy M Bassi—p 270

*Sedimentation Speed of Erythrocytes in Intestinal Amebiasis A V Cicchitto and E Cicchitto—p 274

Sedimentation Speed of Erythrocytes in Amebiasis—According to the Cicchittos, in intestinal amebiasis in tropical countries the sedimentation speed of the erythrocytes is slightly increased There is a parallelism between the behavior of the sedimentation speed and the clinical symptoms The most rapid sedimentation speed is in the blood of patients suffering from enlargement of the liver and liver disorders The changes of the sedimentation speed of erythrocytes are due to disturbances of the metabolism of water and sodium chloride, which are induced by diarrhea, to changes in the metabolism of calcium and to alterations in the crasis of the blood Intestinal toxemia, displacement of labile proteins of the blood and the dysfunction of the liver and of the reticulo endothelial system are also increasing factors of importance Administration of a specific treatment improves the crasis of the blood and the general condition of the patient and simultaneously brings the sedimentation speed to normal The sedimentation speed in intestinal amebiasis has no diagnostic value It has a prognostic value, as it shows the evolution of the condition By evaluating the behavior of the velocity of sedimentation during administration of treatment, one is able to determine the intensity and duration of the treatment needed

Policlinico, Rome

44 437 500 (Sept 15) 1937 Surgical Section

*Motor Functions of Stomach After Resection G Barbera—p 43/
Posttraumatic Ossification of Periarticular Tissues E Caldarera—p 452

Posttraumatic Subdural Hematoma S Ciancarelli—p 460
Functional and Morphologic Surgical Restoration of Stomach and Colon in Ptois and Ectasia B Schnassi—p 483

Motor Functions of Stomach After Resection—Barbera studied the motor functions of the remaining portion of the resected stomach by means of (1) roentgen examination of the gastric stump after administration of small and large amounts of an opaque substance, (2) serial roentgenograms of the folds of the gastric mucosa and (3) kymography of peristalsis of the gastric stump and the anastomosed loop His group included about 500 patients The author concludes that the remaining portion of the stomach and the anastomosed loop regain, shortly after resection, motor conditions close to normal Tonicity, the movement of the folds of the gastric mucosa and peristalsis are the main factors in controlling the emptying of the stomach. Tonus is regained by the stump shortly after resection The folds of the gastric mucosa converge toward the anastomotic mouth at which a new sphincter is almost formed and show opposing movements in the folds and in the anastomotic mouth Peristalsis is less energetic than that of the normal stomach It is uncoordinated, owing to the removal of the pyloric portion during gastric resection However, it has a sufficient action on the emptying of the stomach The type of resection and the greater or lesser amplitude of the new mouth are factors of minor importance with regard to the motor functions of the stomach after resection

Rivista di Clinica Medica, Florence

38 267 324 (July 15 30) 1937

*Splenopathies in Association with Gastroduodenal Diseases M Volterra—p 267

Intravenous Vaccine Therapy of Brucellosis C Pegoraro—p 270

Splenomegaly and Gastroduodenal Diseases—Volterra reports seven cases of chronic splenomegaly of the congestive fibrous or thrombophlebitic type which was associated with gastroduodenal diseases According to the author, the condition is more frequent in men than in women The enlargement of the spleen follows a chronic course before the gastroduodenal symptoms appear Frequently a transient attack of malaria

takes place early in the course of the disease of the spleen. The clinical and roentgenologic aspects of the gastroduodenal symptoms are varied, showing ulcer, duodenitis, pseudoduodenitis, erosions of the gastric and duodenal mucosae or simple congestion of the gastroduodenal mucosa with a tendency to grave hematemesis and intestinal hemorrhage. The tendency to hemorrhages appears late in the evolution of the disease of the spleen. According to the author, disturbances of the abdominal, especially the portal, circulation are the cause of the disease of the spleen with consequent alterations of the gastroduodenal mucosa, which may vary from simple congestion and erosion of the mucosae to formation of ulcer.

Klinische Wochenschrift, Berlin

16 1201 1232 (Aug 28) 1937 Partial Index

- Studies on Modification of Carbohydrate Metabolism by Arsenic H A Oelkers—p 1204
Gastric Ulcers Caused by Deficiency in Vitamin C Experimental Production and Pathogenesis H Hanke—p 1205
Aspects of Cerebrospinal Fluid in Funicular Spinal Disease H U Guizetti and R Prott—p 1206
Technic of Photography of Oral Cavity R Du Mesnil de Rochemont—p 1207
*Observations on Poliomyelitis in Years from 1931 to 1936 A Stender—p 1209
New Simple Colorimetric Procedure for Examination of Function of Sweat Glands L Guttman—p 1212

Observations on Poliomyelitis—According to Stender, it is well known that epidemics change in the course of centuries or even of decades. This is especially true of poliomyelitis, which occurred only sporadically until the beginning of this century but has appeared more frequently in epidemics in the temperate zones during the last four or five decades. In the author's province (Silesia) epidemics were observed in 1932, 1935 and 1936. Diagrams indicating the number of cases and their distribution in the different months of the years from 1931 to 1936 inclusive reveal that epidemics are usually preceded by a series of sporadic cases. Although the epidemics usually cease with the onset of cold weather, they may extend beyond the so called typical months into the winter months. The initial symptoms are frequently like those of influenza, but within a few hours, or one or two days, they are followed by the symptoms of the preparalytic stage, which has been designed as the meningeal period because the symptoms are those of a histologically proved infiltration of the meninges, particularly the pia mater. In the fifty-one cases of poliomyelitis observed by the author, the following preparalytic symptoms were observed: rigidity and pain of the neck (eleven times), pain in the back and lumbago (seven times), pains in the joints (nine times), hypersensitivity to tactile irritation of the skin (twice), profuse sweating (six times), disturbances of the bladder (four times), paresthesias in fingers and toes (once), gastric and intestinal disorders (eight times), abdominal pains (seven times), pharyngitis (nine times). Whereas some of these symptoms are characteristic for poliomyelitis, others might suggest other infections and so it may be impossible to make the definite diagnosis of poliomyelitis on the basis of the preparalytic symptoms. However, if poliomyelitis is suspected, a lumbar puncture should be made for the purpose of examining the cerebrospinal fluid for pleocytosis may exist, during the preparalytic stage. To be sure, leukocytosis of the spinal fluid is found also during the incipient stage of epidemic meningitis, which, however, occurs chiefly during the spring and disappears with the onset of warm weather. Other forms of meningitis are usually readily differentiable from the preparalytic stage of poliomyelitis because the protein values are generally greatly increased which is not the case in poliomyelitis. The paralysis does not always spread to adjoining muscle groups but may first attack a leg, then an arm, then the musculature of the trunk and after that the other extremities. In view of this mode of spreading it has been suggested that from the blood or lymph channels the virus reaches the spinal cord successively at various sites. The ascending type of paralysis was observed twice by the author and in both cases death was caused by respiratory paralysis. Convalescent serum should be administered during the preparalytic stage and even during the paralytic stage. The author injects the serum both into the lumbar portion of the spinal cord and into the muscle and obtained favorable results.

Medizinische Klinik, Berlin

33 1253 1284 (Sept 17) 1937 Partial Index

- Inflammation of Uterine Tubes as Cause of Sterility Therapy and Prophylaxis F von Mikulicz Radecki—p 1253
Nervous Disturbances in Exophthalmic Goiter F G von Stockert—p 1256
*Appearance and Disappearance of Gunn's Jaw Lid Phenomenon (Jaw Winking) During Regression of a Syphilitic Ptosis K Ascher—p 1259
Role of Duodenal Diverticulum in Roentgenologic Diagnosis H Brodersen—p 1266
Results of Dietetic Treatment of Peptic Ulcer L Falkensammer—p 1267
*Simple Reaction for Demonstration of Bilirubin in Urine B von Purjesz—p 1271

The Jaw Winking Phenomenon—Ascher says that Gunn in 1883 gave the first description of the jaw winking phenomenon, and about 100 cases have since been reported. His case reported here presents some unusual aspects and throws light on the origin of the phenomenon. A man, aged 44, had syphilis, complete oculomotor paralysis on the right side, loss of the pupillary reflexes on both sides and bilateral paralysis of the accommodation. The patient was subjected to intensive treatment with bismuth compounds and neoarsphenamine and to malarial therapy. After the completion of these treatments the patient observed one day that when he opened the mouth and chewed, the formerly entirely immobile upper lid jerked upward. After about a week this phenomenon ceased and the upper lid could be moved voluntarily. Meanwhile the other signs of paralysis persisted. The author points out that the majority of cases of jaw winking (jaw lid phenomenon) are associated with congenital ptosis. The intravital development of the jaw lid phenomenon is rare, but what is even more unusual is the fact that it appeared and disappeared in a short time, a peculiarity which never before has been reported. The author points out that the temporary character of the phenomenon contradicts the theory that it is the result of abnormal connections between the nuclei in which originate the involved nerve fibers. The author is inclined to accept as an explanation the existence of innervation complexes which are atavistic and dormant under normal conditions but which become active in case of disturbances in the oculomotor region. He calls attention to other manifestations that suggest a connection between the lifting of the lids and the opening of the mouth (opening of the eyes during eating and opening of the mouth while looking sharply).

Simple Demonstration of Bilirubin—It is pointed out by von Purjesz that the demonstration of bilirubin in the urine is based on the oxidation of bilirubin to biliverdin. The reaction suggested by him is based on this oxidation. From 2 to 3 cc of urine is placed in a test tube and is mixed with 2 cc of a 20 per cent solution of sulfosalicylic acid. Then from two to five drops of a 30 per cent solution of hydrogen peroxide is added. After shaking, the mixture is left standing, the green coloration appears after a few minutes or, at the latest, after fifteen minutes. The intensity of the green depends on the quantity of the bilirubin; if the bilirubin content is slight, there appears an olive green instead of a grassy green. If the urine is free from bilirubin, a reddish color develops. The presence of considerable quantities of blood impairs the reactions, but this shortcoming can be overcome by filtration. Moreover, it is possible to use other types of acid, but the author suggested sulfosalicylic acid because it is available in the smallest laboratory. He stresses that the method is simple, reliable and sensitive and can therefore be used by the general practitioner.

Munchener medizinische Wochenschrift, Munich

84 1441 1480 (Sept 10) 1937 Partial Index

- *Toxic Effects of Arsenic Treatment Siemens and Simons—p 1444
Newer Results in Sphere of Bechterew's Disease L Grabowski—p 1446
*Unusual Form of Vascular Impairment in Scarlet Fever H Zischinsky—p 1448
Question of Treatment of Dazed Condition in Epilepsy F Baldauf—p 1456
Residual Conditions After Cholecystectomy and Their Treatment with Hormone of Wall of Gallbladder R Bimler—p 1458

Toxic Effects of Arsenic Treatment—Siemens and Simons point out that there are widely differing opinions about the toxic effects of the doses of arsenic applied in dermatologic disorders. Moreover the estimation of the incidence of toxic

complications is difficult, because there is no uniformity in the dosage. The authors describe observations in 137 cases of psoriasis in which arsenic treatment according to Gebert was employed for periods of from two to six months. The Gebert treatment was given in the strong dose (fifty-seven cases) or in the weak dose (eighty cases). Gebert's treatment consists in the administration of arsenic in the form of pills (Asiatic pills) and of drops. In the strong treatment pills of 0.005 Gm are given, in the weak treatment pills of 0.001 Gm. All the patients treated by the authors showed toxic manifestations. The maximal dose could be reached only in some of the patients and only a few could support the maximal dose for longer periods. Habituation to arsenic was obtained in a few cases, in others, hypersensitivity developed instead. Abrupt cessation of the arsenic medication never resulted in undesirable manifestations, and it is therefore unnecessary to decrease the number of drops gradually. Since pepper, which is generally added to the Asiatic pills, may cause undesirable complications, it should be omitted. The authors observed also that arsenic treatment does not, as is often stated, result in an increase in weight, but rather in a decrease. Their patients had an average loss of weight of 5 Kg. Cutaneous manifestations were frequently observed in the course of the treatment with arsenic. More than a third of the patients developed melanoses. These signs of intoxication were surprisingly more frequent in the weaker form of arsenotherapy than in the stronger form. Arsenical zoster was observed in thirteen cases of the group in which the weak treatment was administered and in only one of the patients receiving the stronger doses. The zoster disappears again, even if the arsenotherapy is continued, consequently it is no contraindication to the continuation of the treatment.

Unusual Form of Vascular Impairment in Scarlet Fever.—Zischinsky recently reported three cases of non-nephritic edema after scarlet fever. In one of the patients, cutaneous hemorrhages developed and, on the basis of this case, the disorder was considered to be a form of vascular impairment. The present report about this relatively rare complication of scarlet fever was occasioned by the observation of another case and by the fact that the author's attention had been called to earlier reports on this condition. It had been pointed out to him that Quincke as early as 1882 described simple dropsy in scarlet fever and in 1906 the same author described observations on toxic dropsy in scarlet fever. Zischinsky thinks that his observations and those reported by Quincke are identical, although Quincke fails to mention cutaneous hemorrhages. After reviewing other reports from the earlier literature of dropsy after scarlet fever, the author suggests that the absence of reports about this form of vascular changes from the recent literature does not mean that such cases did not occur but rather that they were overlooked or incorrectly interpreted.

Wiener medizinische Wochenschrift, Vienna

87 979 1014 (Sept. 25) 1937 Partial Index

Sport and Danger B. Breitner—p. 982

Pathology of Cancer A. Fraenkel—p. 986

Vitamin Problems During Childhood B. Leichtentritt—p. 991

*Vitamins in Auxiliary Treatment of Chronic Articular Diseases E. Maliwa—p. 996

Vitamins in Chronic Articular Disorders.—Maliwa takes up cases of chronic arthritis in which roentgenoscopy discloses a diffuse deficiency in calcium with relatively slight changes in the joints. This calcium deficiency is not manifested by the lacunar outlines characteristic for acute atrophy of the bones, its x-ray appearance being that of the atrophy of inactivity. Clinical examination reveals a diffuse sensitivity to pressure in the involved bone. In such cases medication with vitamin D is a valuable therapeutic adjuvant, in addition to the usual measures. The author recommends the administration of vitamin D in the form of drops, given two or three times daily, for a period of six weeks. After an interval of four weeks, the same medication may be repeated. The second group of cases discussed by the author are those of typical infectious arthritis. He shows that in this disorder medication with vitamin C is helpful. He provides vitamin C in the form of tablets and in the diet. If calcium deficiency develops in cases of chronic infectious arthritis, the combined administration of

vitamin C and D is advisable. The third group of cases are those in which arthritic and neuritic symptoms concur. In some of these the symptoms of the joints are comparatively slight but the pains are usually severe. In such cases the administration of vitamin B₁ is helpful.

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

SI 4427 4542 (Sept. 18) 1937

Kyphoscoliosis with Neurologic Manifestations W. G. Sillevs Smit—p. 4428

Protrusion of Intervertebral Disk into Spinal Canal with Symptoms of Pressure on Spinal Cord and Roots C. H. Lenshoek—p. 4435

*Food Poisoning by Staphylococci W. A. Timmerman—p. 4443

*Meningism in Leukemia and in Weil's Disease J. E. Minkenhof—p. 4448

Treatment of Addiction to Alcohol A. M. Meerloo—p. 4456

Food Poisoning by Staphylococci.—Timmerman describes several cases of food poisoning that developed after the eating of liver sausage. Examination of the sausage revealed the presence of staphylococci, which proved capable of forming enterotoxins. Since experiments on animals are not conclusive in determining that food poisoning is caused by staphylococci, a test was made on a person who volunteered. The person developed symptoms of acute food poisoning. The author thinks that a larger number of cases of food poisoning are caused by staphylococci than is generally believed and that poisonings that develop after the eating of cheese are often caused by staphylococci. To be sure, poisoning by cheese has been ascribed to *Bacillus coli*, but studies of many samples of cheese revealed that *Bacillus coli* was present in almost 60 per cent of the samples, but none of these samples produced poisoning when consumed. Thus the causal significance of *Bacillus coli* for cheese poisoning seems to be disproved.

Meningism in Leukemia and in Weil's Disease.—Minkenhof reports several cases that presented symptoms of severe meningism. The first patient had a subacute lymphatic leukemia which presented the aspects of a meningococcal sepsis with meningitis. The author points out that neurologic changes are occasionally observed in patients with leukemia and he reviews the literature on neurologic changes in leukemias. The other patients had Weil's disease. In these patients the only symptoms were pyrexia and meningeal irritation. The author shows that in patients with Weil's disease there is no direct relationship between the degree of meningism, the composition of the cerebrospinal fluid and the possible occurrence of *Leptospira* in the arachnoid space. Several other authors have made the same observation, namely, that in all forms of Weil's disease the spinal fluid may be normal as well as abnormal. Apparently it is often possible to detect *Leptospira* in the spinal fluid during the first week of Weil's disease. The author emphasizes that in all cases of meningism and serous meningitis in which the cause is obscure the possibility of infection with *Leptospira* should be taken into consideration.

Ugeskrift for Læger, Copenhagen

99 863 878 (Aug. 19) 1937

*Effect of Inorganic Iodine Combinations and of Diiodotyrosine (3,5 diiodo-4 Oxyphenylalanine) on Simple Hyperthyroidism and on Experimental Exophthalmic Goiter M. Krogh and H. Okkels—p. 863

Studies on Etiology of Infectious Mononucleosis A. Nyfeldt—p. 866

Microspinal Anesthesia Especially in Cystoscopy P. Ejeldbo—p. 872

Hyperthyroidism and Exophthalmic Goiter.—Krogh and Okkels state that the metabolism and histologic examinations show that simple hyperthyroidism in guinea pigs (hyperthyroidism induced by administration of thyroid preparations) is not affected by iodine either in inorganic preparations or in the form of 3,5 diiodo-4-oxyphenylalanine. Experimental exophthalmic goiter (hyperthyroidism caused by injection of a preparation of the thyroid-stimulating hormone) is acted on by iodine, both in inorganic combinations and in the form of 3,5 diiodo-4-oxyphenylalanine and when the doses are equal more rapidly by potassium iodide and slowly by 3,5 diiodo-4-oxyphenylalanine. The administration of iodine alone, like the administration of thyroxine, to some degree reduces the function of the thyroid; iodine cannot further reduce the function of a gland acted on by thyroxine.

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THE PATHOLOGIC PHYSIOLOGY OF THE COMMON BILE DUCT

ITS RELATION TO BILIARY COLIC

WALTMAN WALTERS M D

JOHN M MCGOWAN, M D

WINFIELD L BUTSCH M D

AND

PAUL A KNEPPER M D

ROCHESTER MINN

In the past three years we have been aided in our studies of the pathologic physiology of the biliary tract associated with surgical lesions by being able to visualize the common and hepatic ducts under the fluoroscope and by roentgenographic studies after injection into the common duct through a T tube of nonirritating substances which are opaque to roentgen rays¹. Briefly stated, the cholelithograms so obtained will reveal the presence of (1) any narrowing of the common bile duct and persisting pancreatitis, with an abnormally patent duct of Wirsung, (2) an overlooked stone in the common bile duct, (3) spasm or stenosis of the sphincter of Oddi, and (4) carcinoma of the ampulla of Vater or of the head of the pancreas.

In an effort to determine the influence of the sphincter of Oddi in this respect, studies of the pressure within the common duct were carried out in a series of surgical cases in which the common duct had been explored and drained by T tube¹. With spontaneous attacks of pain similar to that described as biliary colic, increase in intraductal pressure occurred. In some cases injections of morphine produced similar effects, and, when roentgenographic studies were made, spasm of the lower end of the common duct was noted and marked filling of the intrahepatic ducts with the opaque substance used to measure intraductal pressure (brominol) was visualized. Recognizing that this afforded an ideal opportunity for physiologic and pharmacologic studies of the sphincter of Oddi in human subjects, the action of various drugs on the common duct was studied, roentgenograms being used to visualize the appearance of the biliary tract and its ability to empty itself. In an attempt to determine whether the spasm noted at the lower end of the duct was due to spasm of the sphincter

of Oddi, either with or without an associated spasm of the duodenum, McGowan and Knepper³ obtained most interesting results.

THE SPHINCTER OF ODDI

Apparently the first description of the sphincteric mechanism at the lower end of the common bile duct was by Gage⁴ in 1879, although Boyden⁵ stated that "Vesalius (1543) must be credited with calling attention to the membranes that prevent regurgitation of duodenal content (into the common bile duct), to the tortuousness of the entrance of the duct into the intestine, and to some impeding flow from the orifice (of the common bile duct)". Boyden stated further that "Oddi's historical investigations were virtually restricted to animals. He demonstrated 'a more or less pronounced bed of circular fibres encircling the choledochal canal'. He was the first to measure the resistance of the sphincter, to demonstrate that removal of the gallbladder caused a marked dilatation of the bile ducts and to postulate that dysfunction of the sphincter might explain certain morbid affections of the biliary tract—a prophecy which has recently become strikingly realized in the condition known as 'biliary dyskinesia' (Westphal 1923, Ivy, 1934)." (Best and Hicken,⁶ 1935, Hicken, Best and Hunt,⁷ 1936).

Hendrickson⁸ (1898), in an excellent study of the musculature of the entire extrahepatic biliary system in dogs, rabbits and man, presented what is now regarded as the classic description of the musculature surrounding the lower end of the common bile duct (fig 1). Nuboer⁹ in 1931, after studying the extrahepatic biliary system, was able to show in microscopic sections of the sphincteric area the relationship of the musculature of the lower end of the common bile duct to the musculature of the duodenum (fig 2). For an excellent summary of these and other anatomic studies on the subject it is suggested that one refer to Boyden's recent papers.

Further experimental work indicating the importance of the sphincter of the common bile duct in surgical conditions, was presented by Judd and Mann¹⁰

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Read before Section on Pharmacology and Therapeutics at the Eighty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

¹ Walters, Waltman and Thiessen, N. W. Visual Methods of Studying the Physiology of the Common Bile Duct. I. The Problem of Pancreatitis and Sphincteritis. Proc. Staff Meet. Mayo Clin. 9: 772-775 (Dec. 19) 1934.

² Butch, W. L., McGowan, J. M. and Walters, Waltman. Clinical Studies on the Influence of Certain Drugs in Relation to Biliary Pain and to the Variations in Intrahepatic Pressure. Surg. Gynec. & Obst. 63: 451-456 (Oct.) 1936.

³ McGowan, J. M. and Knepper, P. A. Unpublished data.
⁴ Gage, S. H. The Ampulla of Vater and the Pancreatic Ducts in the Domestic Cat (*Felis Domestica*). Am. Quart. Micro. J. 1: 128-169, 1879.

⁵ Boyden, E. A. The Pars Intestinalis of the Common Bile Duct as Viewed by the Older Anatomists (Vesalius, Ghisson, Bianchi, Vater, Haller, Santorini, etc.). Anat. Rec. 66: 217-232 (Sept.) 1936.

⁶ Best, R. R. and Hicken, J. F. Biliary Dysynnergia. Physiological Obstruction of the Common Bile Duct. Surg. Gynec. & Obst. 61: 721-734 (Dec.) 1935.

⁷ Hicken, J. F., Best, R. R. and Hunt, H. B. Cholangiography, Visualization of the Gallbladder and Bile Ducts During and After Operation. Ann. Surg. 103: 210-229 (Feb.) 1936.

⁸ Hendrickson, W. F. A Study of the Musculature of the Entire Extrahepatic Biliary System, Including That of the Duodenal Portion of the Common Bile Duct and of the Sphincter. Bull. Johns Hopkins Hosp. 9: 221-232 (Sept.-Oct.) 1898.

⁹ Nuboer, J. F. Studien über das extrahepatische Gallenwegssystem. Frankfurter Z. chr. f. Path. 41: 198-249, 1931.

¹⁰ Judd, F. S. and Mann, F. C. The Effect of Removal of the Gallbladder. An Experimental Study. Surg. Gynec. & Obst. 21: 437-442 (April) 1917.

in 1917, who demonstrated that the dilatation of the common bile ducts of dogs which follows removal of the gallbladder does not occur when the sphincter of the common bile duct is cut at the time of cholecystectomy. Changes of pressure in the common duct were measured by Potter and Mann¹¹ by inserting a T tube into the

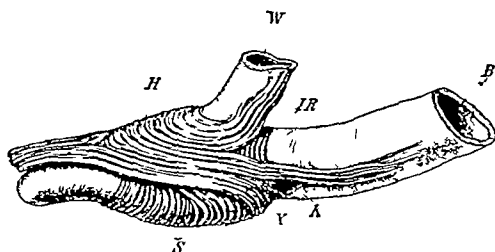


Fig 1—Macerated duodenal portion of common bile duct of man showing musculature of the duct and of the sphincter (after Hendrickson)

common bile duct of the dog. They discovered that pressure in the duct increased markedly following cholecystectomy. They found that rhythmic changes in pressure occurred and that the pressure could be influenced by the diet of the dogs, for instance, milk caused the highest pressure, dog biscuits gave an intermediate reaction, and fasting was accompanied by the lowest pressure. Giordano and Mann¹² showed that alkali placed in the duodenum increased, and acid decreased, the resistance of the sphincter of the common bile duct of the dog. They also demonstrated specimens obtained at postmortem examination of human beings who had had cholecystitis and duodenal ulcer, the musculature of the sphincter had undergone hypertrophy.

Kitakoji¹³ found that preparations which excite the parasympathetic nerves also stimulate the tonus of the sphincter of Oddi, both in vivo and in vitro. He found that muscarine, pilocarpine, physostigmine and espe-

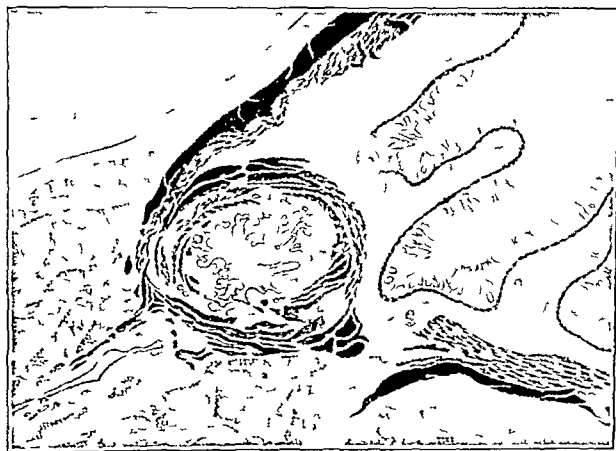


Fig 2—Transverse section showing musculature of the common bile duct at the beginning of the junction with pancreatic duct (after Nubser)

cially acetylcholine produce this action. Atropine and scopolamine paralyze the parasympathetic nerves and relax the tonus of the sphincter of Oddi. Epinephrine

and ergotamine tartrate produce slight change or no change in the intrabiliary pressure. He demonstrated that morphine and nicotine cause a contraction of Oddi's muscle.

Shi¹⁴ confirmed Kitakoji's work and, in addition, demonstrated that solution of posterior pituitary relaxes the sphincter of Oddi. Blass¹⁵ suggested that in the treatment of postcholecystectomy colic 0.06 Gm. of papaverine in 10 cc. of water should be administered through a duodenal tube in order to relax the muscle of the sphincter. A solution of magnesium sulfate should then be placed in the duodenum in order to cause a flow of bile.

The importance of the function of the sphincteric mechanism at the lower end of the common bile duct and the clinical application of knowledge concerning it in the management of disease of the biliary tract have of late been receiving a great deal of attention. Ivy and Sandblom¹⁶ in this country, Schmieden and Niessen¹⁷ in Germany, Pavel¹⁸ in France and Mirizzi¹⁹

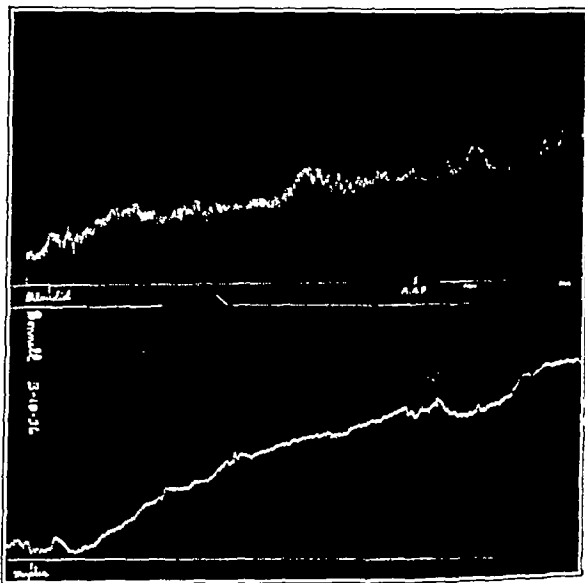


Fig 3—Increased intrabiliary pressure, above following injection of 0.002 Gm. of dilaudid below following injection of 0.01 Gm. of morphine sulfate (Figures 3, 4, 5, 6, 7 and 8 are taken from Butch McGowan and Walters.)

of Argentina have been in the forefront in elucidating the types of biliary dyskinesia and the symptoms which they produce. These men have applied knowledge gained from experimental studies on animals to clinical studies and to operative results.

METHOD OF STUDY

Patients who had been subjected to exploration of the common bile duct and who had had a T tube inserted into the common bile duct for prolonged biliary drainage kindly consented to serve as the subjects of the observations. The apparatus used has been described

14. Shi K. The Influence of the Gallbladder, Oddi's Muscle and the Duodenum upon the Flow of Bile. I. Injection of Visceral Nerve Poisons and Lituitrin. *Jap J Gastro Enterol* 5: 1925, 1933.

15. Blass Gustav. Ueber die Behandlung der sogenannten P. c. c. rezidive nach Cholezystektomie. *Wien klin Wchnschr* 11: 1479, 1933 (Oct.) 1928.

16. Ivy A. C. and Sandblom Philip. Biliary Dyskinesia. *Ann Int Med* 8: 115, 122 (Aug.) 1934.

17. Schmieden V. and Niessen H. Dyskinesie der Gallenwege (Cholepathia spastica) und Chirurgie. *München med Wchnschr* 90: 247, 250 (Feb. 17) 1933.

18. Pavel Ion. Ictere par obstacle fonctionnel du au spasme du sphincter d'Oddi avec examen anatomique. *Presse med* 2: 174, 1933 (Dec. 24) 1932.

19. Mirizzi P. L. La cholecyctomie sans drainage (ch. lécycetomie ideale). Paris: Masson & Cie 1933.

11. Potter J. C. and Mann F. C. Pressure Changes in the Biliary Tract. *Am J M Sc* 171: 202, 217 (Feb.) 1926.

12. Giordano A. S. and Mann F. C. The Sphincter of the Choledochus. *Arch Path* 4: 943, 957 (Dec.) 1927.

13. Kitakoji Yoshiharu. Studien über die Funktionen der Gallenblase und des Oddischen Muskels in Bezug auf die Absonderung der Blasen galle. I. Mitteilung. Ueber den Einfluss von Nervengiften auf die Funktionen der Gallenblase und des Oddischen Muskels. *Nagoya J M Sc* 5: 24, 29 (Nov. 20) 1930.

before²⁰ Briefly it consists of a water manometer which is connected to the T tube at the level of the subject's abdominal wall. A bottle which is fastened high enough to act as a reservoir, is connected with the system in order to fill it with sterile physiologic solution of sodium chloride and to provide a source of supply

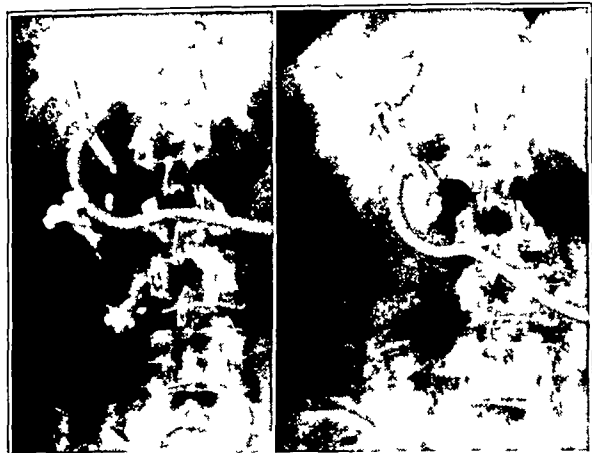


Fig 4—Common bile duct left before administration of morphine right after subcutaneous injection of 0.01 Gm of morphine sulfate

when it is desired to perfuse the common bile duct with a quantity of this solution. Thus two readings were obtained: (1) that for the intrabiliary pressure, which is obtained by observing the height at which fluid will stand in the manometer, and (2) that for the perfusion pressure, which is obtained by observing the height at which the fluid must be raised in the manometer in order that the resistance of the sphincter at the lower end of the common bile duct may be overcome and the fluid may flow into the duodenum. For the purpose of obtaining permanent records a U shaped manometer that contained a float and writing point which was in contact with a smoked drum was substituted for the water manometer. Roentgenograms of the common bile duct, which are made after the injection of an opaque oil (brominol), afford a further method of studying the mode of action of the drugs used.

DRUGS WHICH PRODUCE SPASMODIC CONSTRICTION AT THE LOWER END OF THE COMMON BILE DUCT

The first observation of significance was that subcutaneous injection of one-sixth grain (0.01 Gm) of morphine sulfate caused an increase in the intrabiliary pressure from the normal of from 0 to 20 mm of water to from 200 to 300 mm of water. This elevation of pressure began from two and a half to five minutes after the injection of the morphine and reached its maximum in fifteen minutes. Concomitant with this rise in pressure the patient may experience an attack of biliary colic. In other cases there may be no pain but only a sense of epigastric tightness and fullness. The injection of morphine frequently will produce an increase in intrabiliary pressure without evoking pain. The pain, which originates in the epigastrium and right upper quadrant of the abdomen and extends to the right subscapular region has been found to follow the administration of morphine only in cases in which relief is sought because of the "postcholecystectomy syndrome."

After the administration of morphine the value for the perfusion pressure also was elevated from a normal of from 150 to 200 mm of water to from 400 to 450 mm of water.

The effect of morphine on the common bile duct is prolonged. The pressure in the common bile duct may remain elevated two hours or more after the administration of this drug.

Injection of one-third grain (0.02 Gm) of pantopon (the hydrochlorides of the alkaloids of opium, principally morphine), one thirty-second grain (0.002 Gm) of diluidid or 1 grain (0.065 Gm) of codeine produce an elevation of both the intrabiliary pressure and the perfusion pressure, but the elevation was neither so swiftly produced nor so high as that which follows the injection of morphine (fig 3).

The means by which these drugs cause an elevation of the intrabiliary pressure and delay in the emptying of the common bile duct is well shown by roentgenograms. The roentgenograms of the common bile duct which are shown in figure 4 were made before and after the administration of one-sixth grain (0.01 Gm) of morphine. The sharp constriction of the lower end of the common bile duct effectually prevented the emptying of the duct. This blocking of the common bile duct dammed back the medium and caused it to enter the hepatic ducts (fig 4).

DRUGS WHICH RELAX SPASMODIC CONSTRICTION AT THE LOWER END OF THE COMMON BILE DUCT

Inhalation of amyl nitrite produced an immediate and dramatic decrease of the elevated intrabiliary pressure to zero. Simultaneously with this fall there was a prompt relief of the pain or of the feeling of fullness which accompanied the elevated pressure. Inhalation of amyl nitrite will instantly lower the elevated intra-

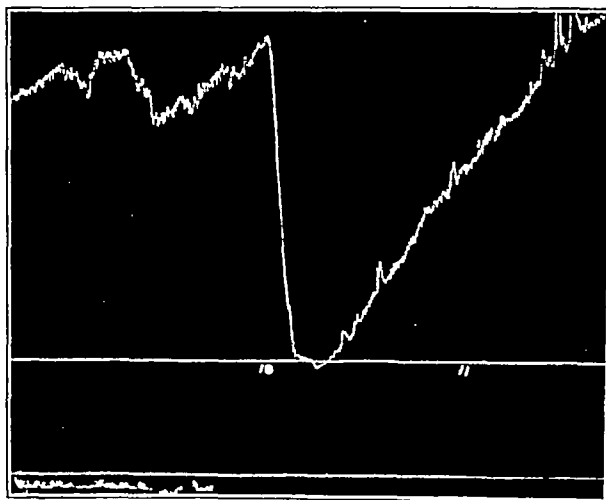


Fig 5—Effect of inhalation of amyl nitrite on increased intrabiliary pressure caused by injection of morphine sulfate.

biliary pressure, whether it is spontaneous or the result of injections of morphine. In the latter case the relaxation produced by inhalation of amyl nitrite is prompt but immediately afterward the pressure begins to increase slowly until it reaches its former level. This is the result of the prolonged action of morphine (fig 5).

Administration of glyceryl trinitrate in doses of one one-hundredth grain (0.0006 Gm) produced a decrease

²⁰ McGowan J M Butsch W L and Walters W L Pressure in the Common Bile Duct of Man Its Relation to Pain Following Cholecystectomy J A M A 106 2227 2230 (June) 1936

in the elevated pressure, which was less marked but more lasting than that which was produced by inhalation of amyl nitrite, but if the elevation in pressure was the result of injection of morphine, it again increased to its former height. As glyceryl trinitrate produces a more lasting decrease in the pressure than does inhala-

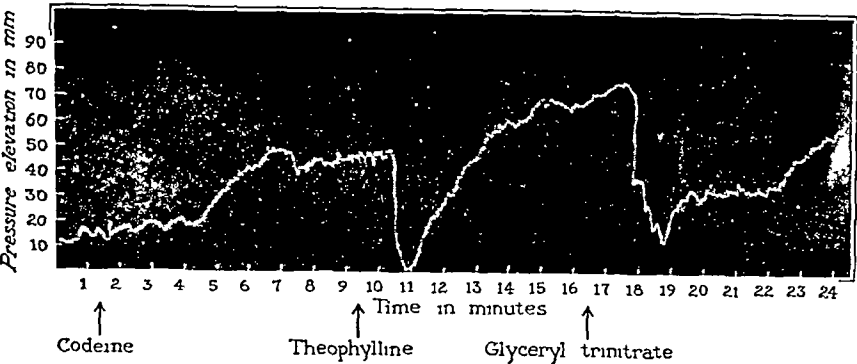


Fig. 6—Comparison of the effects of glyceryl trinitrate and theophylline with ethylenediamine on elevated intrabiliary pressure

tion of amyl nitrite, the former drug is of more value for therapeutic purposes. It is effective when placed under the tongue.

Intravenous administration of 4 grains (0.24 Gm.) of theophylline with ethylenediamine produced a relaxation of the sphincteric mechanism similar to that produced by inhalations of amyl nitrite. Figure 6 shows a comparison of the actions of theophylline with ethylenediamine and glyceryl trinitrate on the elevated intrabiliary pressure of a patient who previously had received 1 grain (0.065 Gm.) of codeine hypodermically.

The roentgenograms of the common bile duct show very graphically how inhalation of amyl nitrite relaxed the spasm at the lower end of the common bile duct which morphine produced, and how the former drug caused emptying of the hepatic and common bile ducts (fig. 7).

THE ACTION OF OTHER ANTISPASMODIC DRUGS

Other drugs which generally are believed to have an antispasmodic action were tested for the effect on the sphincteric spasm caused by injection of morphine.



Fig. 7—Left spasm of lower end of common bile duct following injection of 0.01 Gm of morphine sulfate; right relief of spasm by inhalation of amyl nitrite

The drug to be tested was first injected so that we might be sure that it did not elevate the intrabiliary pressure. Then one-sixth grain (0.01 Gm.) of morphine was injected and a few minutes later, after the elevation of pressure produced by the morphine had reached its maximal height, another dose of the drug to be tested

was given. In this manner it was found that injection of one seventy-fifth grain (0.0009 Gm.) of atropine produced dilatation of the pupils and dryness of the mouth but did not relax the sphincteric spasm caused by the injection of the morphine. An injection of one one-hundredth grain (0.0006 Gm.) of scopolamine hydrobromide did not have any effect on the spasm of the sphincter (fig. 8).

Other drugs which have been prescribed because of their ability to relax spasm of other muscular organs were administered in order to determine whether they would lower the intrabiliary pressure produced by injections of morphine. Forty milligrams of muscle relaxant, 30 cc of alcohol, 0.6 mg of histamine, three fourths grain (0.05 Gm.) of epinephrine and 1 cc of a 1:1,000 solution of epinephrine did not have any effect on the pressure in the com-

mon bile duct when they were administered subcutaneously at different times. Intravenous administration of 10 cc of a 10 per cent solution of calcium chloride

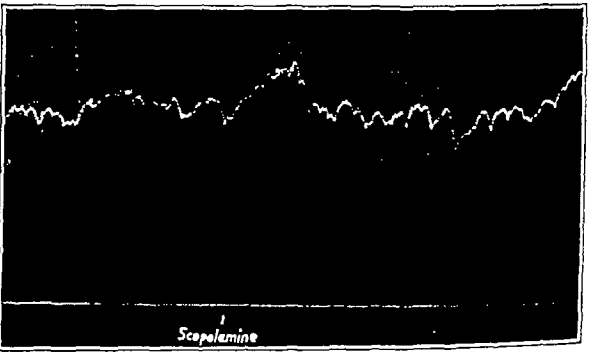


Fig. 8—Effect of injection of 0.0006 Gm of scopolamine hydrobromide on increased intrabiliary pressure caused by injection of morphine

also failed to lower the pressure. No decrease in the pressure was noted after the intravenous administration of one-half grain (0.032 Gm.) of papaverine hydrochloride or after the intramuscular administration of 3 grains of the same drug.

Of the parasympathicomimetic drugs, both physostigmine and acetylcholine were tested, but no effect on the intrabiliary pressure was noted. The synergistic action of these two drugs was recognized and they were administered in combination, that is, 100 mg of acetylcholine was given twenty minutes after the administration of one twenty-fifth grain (0.0026 Gm.) of physostigmine, but no further effect was noted.

Administration of 0.5 cc of a 1:2,000 solution of ergotamine tartrate, 7½ grains (0.5 Gm.) of caffeine and 2 grains (0.12 Gm.) of phenobarbital sodium at different times, likewise produced no effect. All the drugs were administered hypodermically unless otherwise stated.

DUODENAL MOTILITY

During the course of these studies we were aware of the fact that it would be necessary to try to determine whether the increase in pressure within the common duct could be attributed to spasm of the sphincter of the common duct (Oddi) alone or to spasm of the sphincter of the common duct in combination with

spasm of the duodenum (acting on the intraduodenal portion of the common duct), the result of increased duodenal peristalsis. This opinion was expressed in an editorial²¹ published in August 1936.

It will be recalled that Orr²² in 1933 presented experimental evidence of the stimulating effect of small doses of morphine on intestinal peristalsis. To study the problem properly in human subjects it is necessary that the motility of the duodenum be recorded by means of a rubber balloon lying in the duodenum. This is difficult to place properly and, although Knepper is continuing to work on methods of recording such movements through a closed, intrinsic pressure apparatus, the studies presented have been made with an open tube in the duodenum. Barium sulfate is injected into the duodenum through this tube and brominol is simultaneously injected into the common duct through the T tube. The pressure recording apparatus is then connected to the T tube. Roentgenograms are made to determine normal appearance of these simultaneously injected structures (fig 9). An injection of morphine is then given hypodermically, the changes in intraductal pressure are recorded and roentgenograms are taken. Following the injection of morphine contracture of the duodenum can be

noted to occur simultaneously with spasm of the lower end of the common duct, with a descent of 2 cm in the position of the area of spasm of the common duct. The biliary tract, both extrahepatic and intrahepatic, fills with the opaque substance and pain is experienced by the patient (fig 10). On inhalation of amyl nitrite, pain is relieved, spasm of the duodenum is



Fig 9—Outline of duodenum (barium sulfate) and common duct (brominol)

released, the lower end of the common duct relaxes, and the opaque fluid in the common and hepatic ducts is discharged into the duodenum (fig 11). Further studies are being undertaken to see whether independent stimulation of these structures, namely, the sphincter of Oddi and the duodenal wall, cannot be accomplished in order to determine whether they act independently or whether one influences the other.

SUMMARY AND CONCLUSIONS

The data which we have collected suggest that the administration of morphine is likely to precipitate an attack of biliary colic in some patients with lesions of the biliary tract. Administration of one-sixth grain (0.01 Gm) of morphine in such cases will frequently produce an increase of intrabiliary pressure to from 160 to 300 mm of water for two or more hours, accompanied by severe pain. While a large dose of morphine will decrease sensibility to pain by acting on the higher nerve centers, it at the same time prolongs and even augments the increase in pressure in the common bile duct.

Morphine, codeine and dilaudid produce a marked increase in the pressure within the common bile duct because they produce a spasm in the sphincter at the lower end of the duct. Amyl nitrite, glyceryl trinitrate and theophylline with ethylenediamine will completely relax the sphincteric spasm and thus produce a fall in the pressure. Certain other drugs which have been tested do not have any effect on the pressure within the common bile duct.

We have studied a series of nine cases in which repeated attacks of biliary colic developed after the gallbladder had been removed. In these cases the subcutaneous injection of one-sixth grain (0.01 Gm) of morphine sulfate produced pain, which was completely relieved by the administration, under the tongue, of one one-hundredth grain (0.0006 Gm) of glyceryl trinitrate or by inhalation of amyl nitrite. In two of these cases, stones were subsequently found in the common bile duct at operation.

In two of the cases pain, which was associated with biliary colic and which occurred before cholecystectomy, was relieved by the administration of glyceryl trinitrate. In three other cases the patients were relieved of similar attacks which occurred shortly after cholecystectomy.

Patients who have disease of the gallbladder frequently say that morphine gives them a feeling of fullness or makes them sick. The explanation probably is that a normally functioning gallbladder can maintain

intrabiliary pressure at a normal level by absorption of fluids and relaxation of its smooth muscle whereas a diseased gallbladder on the other hand, does not possess this function. We suggest the use of morphine as a diagnostic procedure in the study of patients who have the postcholecystectomy syndrome.

If the administration of morphine brings on an attack

of pain and glyceryl trinitrate relieves it, the evidence is in favor of the condition being the result of a disturbance in the sphincteric mechanism at the lower end of the common bile duct, either with or without associated stones in the duct. Administration of glyceryl trinitrate in doses of one one-hundredth grain (0.0006 Gm) will



Fig 10—Biliary tract and duodenum after administration of morphine. Note duodenal spasm and abrupt termination of common bile duct.



Fig 11—Relaxed duodenum and partial emptying of bile ducts after administration of amyl nitrite.

21. Walters, Waltman. The Pain Mechanism in Biliary Disease. *Editorial Surg. Gynec. & Obst.* 63: 251-252 (Aug.) 1936.

22. Orr, T. G. The Action of Morphine on the Small Intestine and Its Clinical Application in the Treatment of Peritonitis and Intestinal Obstruction. *Ann. Surg.* 98: 835-840 (Nov.) 1933.

relieve the pain associated with the postcholecystectomy syndrome. We do not recommend its use except as a temporary measure, until after the common bile duct has been explored, since stones in the common duct frequently account for the sphincteric spasm.

We have not noted any untoward effects from the use of glyceryl trinitrate except a feeling of warmth, weakness, and occasionally of tightness in the head. These are purely transitory, however, and pass off in a few minutes. However, we recommend that the patient be in the recumbent position when the drug is taken. We have found that the tablets made for hypodermic use are more effective than the regular triturates.

ABSTRACT OF DISCUSSION

DR A. C. ILL, Chicago. Dr Walters and his co authors are extending to the human being in the clinic under well controlled conditions observations which have been made on animals and medical students. I believe that a spasm of the sphincter of Oddi does occur in the human being and is not infrequently responsible for the production of symptoms and disorders of the biliary tract. Morphine, which the authors have used to produce the spasm or hypertonus of the sphincter, is the drug which Dr Luehti in my laboratory used to show the relation between duodenal tone and motility and the resistance offered to the flow of bile from the common duct into the duodenum. So I can accept the observation without any reservation that morphine will increase the resistance to the flow of fluid from the common duct into the duodenum. I am not surprised that the antispasmodics used decrease this resistance. I am surprised however that the authors did not get some decrease in resistance with atropine. Of course, they used only one seventy-fifth of a grain (0.0008 Gm.) and we generally employ from one fortieth to one sixtieth of a grain (0.0016 to 0.0010 Gm.), a larger dose. I have observed that atropine relaxes the sphincter in the animal and possess indirect evidence that one sixtieth of a grain of atropine hypodermically will do the same in man. It is surprising that pain is experienced by a patient from an increase in pressure of only from 10 to 20 cm. of water pressure. Normally the biliary passage is subjected to a pressure of 10, 15 or 20 cm. of bile and no pain is experienced. I should like to ask the authors in that regard how quickly they raised the pressure. As a general rule the speed with which the pressure is increased is important in the production of visceral pain of any sort. I have an idea that, if the pressure was exerted more slowly, pain might not result.

DR ROBERT L. PAYNE, Norfolk, Va. The authors have pointed out types of cases of disturbance in the common duct in which they have placed a T tube for drainage. Practically seven methods of trying to determine the condition of the sphincter of Oddi are recognized: (1) injection of saline solution through the tube; (2) clamping of the T tube to shunt the bile down; (3) the food test; (4) the question of bile in the stools; (5) Reid's hydrostatic test which is very valuable; (6) the question of bilirubinemia; and (7) X-ray visualization. Of all these except X-ray visualization the most valuable is clamping of the tube. Even though it does not produce pain and apparently is turning all the bile through the sphincter into the duodenum, this does not mean that such an act is taking place, because study of the blood shows that frequently after the tube has been clamped for twenty-four hours the serum bilirubin will be found to have risen above the previous normal level. X-ray visualization should be used in preference to all other methods. The authors have called attention especially to the value of the X-rays in showing obstruction at the sphincter of Oddi, whether due to stone or spasm, postoperatively. I would emphasize the value of X-ray delineation of the common duct and particularly obstruction at the sphincter of Oddi at the time of operation. My associates and I have done about seventy-five of these sorts of which have been visualizations at the time of the operation. Some of these cases of postcholecystectomy colic we have eliminated by the deter-

mination by means of X-rays at the operation that there was a small stone or two small stones located at the sphincter that could not be felt, or that there was spasm and obstruction at the sphincter from some form of disturbance. Surgeons rather broadly postulate that in cholecystitis there is some hypertrophy of the sphincter. Bakes, Allen and others have attempted to overcome this by dilation when it could be demonstrated on the operative table by exploration of the duct or with X-ray visualization. I have tried this dilation a good many times. I don't know whether the sphincter stays dilated. I doubt the propriety of the method as a routine to the point where one carries it up to 10 mm. as Bakes advocates. The authors have brought the relief of pain in undetermined types of postcholecystectomy colic by the use of amyl nitrite or glyceryl trinitrate. I cite the case of a woman who had stones in the common duct after cholecystectomy but who could not come for operation for various reasons. I gave her hypodermic tablets of glyceryl trinitrate and she was able to get relief from putting one or two of these under her tongue during the repeated attacks of colic.

DR R. RUSSELL BEST, Omaha. Inspired by Dr Ill's publications some three years ago, I began injecting radiopaque substances into the common duct at the table, and through T tubes or fistulas following operation. I discovered that the sphincter of Oddi was usually contracted under anesthesia, and not infrequently following operation, and that morphine, atropine or a combination of these had an inconstant effect on this spastic state. Glyceryl trinitrate, although not always effective, was found to be more consistent than atropine in relaxing the sphincter. During the last year I have experimented with increasing the flow and pressure of bile within the common duct and have displaced stones from the common duct into the duodenum. I operated on a patient in whom palpation, probing and irrigation revealed nothing within the common duct. A cholangiogram one week later showed a filling defect at the lower end of the common duct and one ten days later identified this as a stone. I gave dehydrocholic acid to increase the flow and pressure of bile. Taking the readings was a little difficult because I was working against a sphincter the status of which I do not know or understand. In conjunction with the acid I gave the antispasmodics atropine and glyceryl trinitrate and magnesium sulfate to relax the sphincter from the duodenal side and also injected warm olive oil into the common duct to relax the sphincter from the choledochal side. By repeating the treatments over a period of a month, I dislodged the stone, as proved by a cholangiogram. I operated on a woman and opened her common duct, but no stones were discernible. One week later a cholangiogram revealed that the common duct was filled with stones. The foregoing treatment was instituted and a cholangiogram repeated in four days. Only one stone remained at the lower end of the common duct. Nine had been recovered from the stools. The treatment was repeated and the last stone was passed. The cholangiogram reveals no stones in the duct. I cannot advocate the routine use of dehydrocholic acid to wash these stones out of the liver and common duct unless one has a safety valve in a T tube or fistula. I might add that I have used it in cases in which these were not present, but with full appreciation of its dangers.

DR WALTER WALTERS, Rochester, Minn. Of the problems presented today let us take the method of visualizing the common bile duct postoperatively by injecting an opaque substance into it. This has enabled one to visualize among other things a persisting common duct stone overlooked at the time of operation. I want to mention a case, because after fragmenting the stone with ether, as suggested by Pribram, and diluting the ether with alcohol so as to increase the intraductal pressure relaxation of the sphincter of Oddi was accomplished by amyl nitrite and the stone fragments were forced through the duct into the duodenum. Dr Payne's suggestion regarding the use of hippuran is an excellent one and we will try it. Dr Pett is to be congratulated for calling attention (I think it is two or three years or so ago) to the value of roentgenologic examination of the duct at the time of operation. I must confess that my trials with it at operation have not been as satisfactory as I would have liked so I have more or less relied on clinical manifestations of common duct obstruction palpation, X-ray

is not accurate), exploration of the interior of the duct, which is very accurate if one can explore the intrahepatic as well as common ducts, and dilation of the end of the common bile duct with scoops. Relative to the underlying cause of the spasms of the sphincter of Oddi which persist after cholecystectomy, when there is neither pancreatitis nor common duct stone but when there is increased resistance or spasm of the sphincter of Oddi, what is best to do with such patients? These cases continue to be ones in which further study may determine effective methods of overcoming such spasms.

THE LATE EFFECTS OF ACUTE PYELITIS IN GIRLS

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AND

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What is the ultimate effect of pyelitis in girls? Does it clear up completely, leaving a perfectly normal urinary tract? Or may it leave behind residues which although symptomless, may predispose toward subsequent recurrence? Is the child who has had only one attack of pyelitis less liable to suffer persisting damage than the child who has had repeated attacks? Is it possible that the effect of pyelitis in childhood may persist asymptotically into adult life, thus correlating the two great groups of urinary infections?

The object of our study has been to try to answer some of these questions, because these particular problems are important and have not received the attention they deserve. This is a preliminary report, as we expect to continue our studies. It is quite probable that the answer to these questions will definitely affect our attitude toward the treatment of urinary infections in girls.

We use the term pyelitis rather loosely when referring to childhood. Strictly speaking, one should employ the term urinary infection unless infection is actually demonstrated in the upper part of the urinary tract. Practically however, the word pyelitis is so well established and the clinical picture so definite that we continue to use it, with the aforementioned reservation.

METHOD OF INVESTIGATION

From the files of the Harriet Lane Home for Invalid Children (the Pediatric Department of the Johns Hopkins Hospital) we obtained and studied the histories of girls who had had urinary infections years ago. In addition, Dr Gustav Woltereck furnished the records of four private patients whom he had treated for pyelitis in infancy. This gave us a group in which we could observe the late effects of uncomplicated urinary infection in fairly normal and healthy children. Through the social service department we tried to find and induce these former patients to return for study. It is at once evident to persons who have made any such follow-up studies that we were attempting a rather difficult task in inducing high school pupils, young mothers or employed women to return for urologic

study, because most of them were perfectly well and knew nothing of their childhood illness or had dismissed it from their minds.

Our method of investigation had to be suited to this situation. Obviously, we could not perform any investigations which might be painful or cause reactions or incapacitation. In other words, we could not ask too much of the subjects because they had already granted us the favor of returning for the examination. We assumed the entire responsibility for the procedure.

The investigative procedure was therefore a compromise between our desire to make a complete genito-urinary and cystoscopic examination and the necessity of interfering as little as possible with the daily occupation of these young women. The procedure we adopted was as follows: (1) history, (2) physical examination, (3) examination of catheterized specimen of urine from the bladder, (4) culture of urine from the bladder, (5) intravenous phenolsulfonphthalein test for thirty minutes, (6) intravenous urography.

This method of examination is practically painless, causes no incapacitation and enables the patient to



Fig 1 (case 2).—At the age of 4 years this patient had one attack of acute urinary infection. She had no further urinary disorders. Follow-up study at the age of 20 showed occasional leukocytes in the urine and colon bacillus infection. The upper part of the ureters are dilated and redundant; the right ureter is redundant and the left ureter is angulated. The patient is in excellent general health; the only symptom being occasional pain in the back.

return to her duties immediately afterward without any further inconvenience. It requires about one hour. We realize that such an examination falls short of our ideal in many ways. As far as we know, however, ours is the only comprehensive attempt to study this particular problem.

RESULTS OF THE FOLLOW-UP STUDY

Thirty of the former patients have returned for follow-up study. For convenience we have divided them into two main groups: (1) those who had only one attack of pyelitis in childhood and (2) those who had more than one attack. The patients in each of these groups are then classified into two subgroups according to their condition at the present time. (A)

From the Departments of Gynecology and Pediatrics of the Johns Hopkins Hospital and the Johns Hopkins University School of Medicine. Read before the Section on Urology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1917.

Dr John W. Pierson and Dr Charles A. Waters of the roentgenologic department of the hospital examined all urograms. The Winthrop Chemical Company supplied the diodast and the Mallinckrodt Chemical Works supplied the hypuran used in this study.

those who at present have a normal urinary tract and (B) those who now have urinary abnormalities. The thirty former patients are thus classified as follows:

1 Those who had only one attack of pyelitis in childhood, nine patients. A Normal urinary tract now, three patients. B Urinary abnormalities now, six patients.

2 Those who had more than one attack in childhood, twenty-one patients. A Normal urinary tract now, nine patients. B Abnormal urinary tract now, eleven patients.

We shall consider these groups in the order named, presenting tables which show the clinical data relating to the urinary infection of childhood and other tables which present in detail the results of the urologic examinations of the same patients made years later, in our present follow-up study.

THE EFFECT OF ONE ATTACK OF PYELITIS IN CHILDHOOD

In table 1 we have summarized the clinical data recorded during the former urinary infection in the histories of these nine children who had only one attack diagnosed clinically as acute pyelitis, at ages ranging from 10 months to 4 years. During their illness, they presented only the usual characteristics found in patients with fairly severe acute pyelitis.

Table 2 shows the present condition of the urinary tract of the same nine persons. Their present ages vary from 10 to 20 years. On the average, thirteen years has passed since their former urinary infection. All but one are now in excellent or good health, the health of one is fair. Not one of these young women is aware of any urologic disorder or has sought professional advice because of any urinary symptoms.



Fig. 2 (case 4).—At the age of 2 years this patient had one attack of pyelitis; she had no further urinary disorders. Her present age is 10 years. The urine now contains streptococci as it did eight years ago. The urogram shows a small stone in the highest calyx of the left kidney.

Urologic examination of three of the nine revealed no disorder whatever; they are now completely normal.

Six of the subjects, however, showed definite though usually slight abnormalities on urologic study. They had no spontaneous complaints, but, on questioning, we found that one had nocturia, one had enuresis and

one occasionally had pain in the back (fig. 1). Our examination showed that three have a varying number of leukocytes in the catheterized urine from the bladder, five have positive urinary cultures, one has a distinct diminution in renal function and five have urographic abnormalities. One has a small stone in the left kidney.



Fig. 3 (case 13).—Beginning at the age of 4 years this patient had recurrent urinary infections for five years. Her present age is 13 and her general health excellent. The urine is normal and sterile. The urogram shows a dilated right ureter. The patient has pain in the right flank at times.

(fig. 2), four show slight grades of ureteral or pelvic dilatation. One girl who had streptococci in the urine eight years ago shows the same organism now.

In summary, then we have made urologic examinations of nine girls or young women who had only one attack of pyelitis, on the average thirteen years ago. Three of these have perfectly normal urinary tracts now, in six we found slight though definite pathologic changes in the urinary tract. All but one of these persons look perfectly well and are in good health.

THE EFFECT OF REPEATED ATTACKS OF PYELITIS IN CHILDHOOD

Table 3 outlines the clinical data observed during repeated attacks of urinary infection in a group of ten children who now have completely normal urinary organs. In this group the age at onset varied from 1 to 5 years. The attacks recurred for a number of years varying from one to five. On the average ten years has passed since the last attack, the longest period of observation being nineteen years. None of these children suffered any permanent urinary damage whatever, although they had repeated attacks of pyelitis.

Table 4 outlines the clinical data on a group of eleven children who had repeated attacks of pyelitis years ago and who still have persisting pathologic changes in the urinary tract.

In general, these children had recurring attacks for a long time, varying from one to thirteen years. The average number of years during which they had recurrences was six. On the contrary, it will be noted that in the group that showed no subsequent pathologic change the recurrences in childhood continued on the

average for only two and four-tenths years. In other words, the longer the attacks continue, the greater the likelihood of permanent damage to the urinary tract.

The chronicity of the infection in childhood is the feature that distinguishes this group, the individual attacks seemed to show no unusually severe characteristics.

Table 5 shows the present condition of the patients whose former condition is outlined in table 4. Their present ages vary from 9 to 27 years. We examined them from eight to nineteen years after their first attack and from three to fourteen years after their last attack.

The general health of the group as a whole is strikingly good. Only one person is in bad health, and two are in fair health, the general condition of the others is excellent or good.

The present symptoms of these young women usually vary with their urologic condition. One has distinct renal insufficiency, with pain in the right side and edema of the extremities. Her phenolsulfonphthalein excre-

advised by urologists that she should never have any cystoscopic treatment.

This case illustrates the extreme consequence of neglected pyelitis in childhood—chronic, recurring infection which persists throughout life, a nephrectomy which may have been unnecessary, pyelitis in preg-

TABLE 3—Clinical Data on Former Attacks of Recurrent Pyelitis in Subjects Whose Urinary Tracts Are Normal Now *

Case No.	Present Age Yr	Age at Onset Yr	Age at Last Attack Yr	Admitted to Johns Hopkins	White Blood Cells	Red Blood Cells	Casts	Alb. min
25	19	1	3	1918	++++			++
26	20	1	3	1917	++++	+	+	+
27	15	1	2	1923	++++	+		+
28	8	3	8	1936	++++			
29	12	3	6	1928	+++			
10	15	1	3	1922	+++			
15	16	5	10		++++			
20	15	4	6	1926	+++			
23	16	5	6	1925	++++			
24	15	1	2	1922	++++			++

* Cultures were negative in all cases.

TABLE 4—Clinical Data on Former Attacks of Recurrent Pyelitis in Patients Who Show Persisting Abnormality Now

Case No.	Present Age Yr	Age at Onset Yr	Age at Last Attack Yr	Admitted to Johns Hopkins	White Blood Cells	Red Blood Cells	Casts	Alb. min	Culture
8	18	3	4	1922	++++	++	+	+++	Colon bacilli
9	10	1	5	1928	++++		+	++	
11	13	5	6	1928	+++				
12	19	3	10	1928	+++				
13	13	4	9	1928	+++			++	
14	19	5	11		++++			+	
16	18	1	11		++++			+	Colon bacilli staphylococci
17	15	5	11	1932	++++			+	Colon bacilli
18	21	11	24	1921	++				Colon bacilli
21	9	1	6	1928	++++				Colon bacilli
22	13	1	10	1934	++++				Colon bacilli

nancies which should never have occurred, and subsequent advice which has kept her an invalid. The greatest damage was done when she was neglected as a child.

The only other serious urologic abnormality in this group is found in case 17, a functionless shrunken kidney. This girl had recurring urinary infections between the ages of 5 and 11 years, she is now 15 years old. Urine from the bladder showed moderate pyuria with colon bacilli on our first follow-up study. Retrograde cystoscopy revealed a functionless though sterile left kidney, after the drainage from the right kidney was improved, its function increased to 60 per cent phenolsulfonphthalein excretion in thirty minutes. Although this girl has shown much improvement, it may be impossible to restore the function of her left kidney.

The remaining nine in this group are all in average good or excellent general health. One young woman, now 18 years old, has an interesting syndrome, recurring pain in the right side with fever (from 100 to 102 F) during menstruation. The removal of her appendix in 1923 had no effect on this situation. She has a urinary infection with the same organisms (colon bacilli and staphylococci) which were present seven years ago during her last definite attack of pyelitis. Her urograms are normal.

TABLE 1—Clinical Data on Former Urinary Infection in Subjects Who Had One Attack of Pyelitis

Case No.	Present Age Yr	Age at Onset Yr	Admitted to Johns Hopkins	White Blood Cells	Casts	Albumin	Culture
1	12	1	1926	++++		+++	
2	20	4	1921	++++		+	
3	19	4	1922	+++		+	
19	21	4	1920	++		+	Colon bacilli
4	10	2	1929	+++	+	+	Streptococci
30	18	2	1920	++++		+	
Subject Now Normal							
5	12	2	1927	++++		++	
6	16	1	1922	+++			
7	13	4	1923	++++			Colon bacilli

TABLE 2—Follow Up Study on Subjects Who Had One Attack of Pyelitis

Case No	White Blood Cells	Red Blood Cells	Culture	Phenol sulfon phthal ein	General Health	Symptoms	Urogram
Abnormality Now Present							
1	Occasional	+	Yeast	60	Faint	None	Bilateral nephroptosis angulation at right uretero pelvic junction
2	Occasional	0	0	30	Good	Pain in back	Dilated and redundant ureters angulation at left uretero pelvic junction
3	+	0	Colon bacillus	60	Good	Nocturia	Normal
19	0	0	Streptococci	50	Good	None	Dilated upper right ureter
4	0	0	Streptococci	50	Fair	Undernourished enuresis	Stone in left kidney
30	0	0	Staphylococci	10	Excellent	None	Slight hydro nephrosis
Subject Now Normal							
5	Two had an occasional red blood cell in the catheterized urine						all examinations
6	we considered the case probably due to trauma						
7	otherwise gave negative results						

tion for thirty minutes is only 20 per cent. She is now 27 years old. Ten years ago her left kidney was removed at a local hospital presumably for infection. Her remaining kidney is hydronephrotic, ptosed and infected (fig 4). The urine contains numerous white blood cells, a few red blood cells and the Shiga dispar bacillus. She has had two pregnancies, both of which were stormy, one being complicated by exacerbation of the urinary infection. This young woman has been

As table 5 shows, in all these cases there are definite urologic abnormalities. All but one subject have positive urinary cultures, all but three have varying numbers of leukocytes in the urine, five have phenolsulfonphthalein excretions below 40 per cent for half an hour and seven have urographic abnormalities. One has a small stone in the ureter.

Only two of these subjects have any notable symptoms. From seven we could elicit a history of occasional discomfort which may have been due to the urinary tract. Two have no discomforts at all. All these patients need urologic attention now.

In summary, we are presenting urologic studies of twenty-one girls and young women who had repeated attacks of urinary infection in childhood. The likelihood of permanent damage increases directly with the persistence of the infection in childhood. Approximately half of these young women still have urinary abnormalities from three to fourteen years after their childhood infection.

PYELITIS IN PREGNANCY

Only three of the thirty patients have been followed through pregnancies. One of the three had a recurrence of pyelitis at that time. Our inability to foretell what will happen in any individual case is illustrated by one particular experience. A woman now 19 years old (case 14) had pyelitis from the age of 5 years till she was 11. When examined one year ago, the catheterized urine showed albumin, colon bacilli and an occasional white blood cell. The urogram was perfectly normal. She went through her recent pregnancy without the slightest suggestion of a urinary infection,



Fig. 4 (case 18).—Urogram showing the hydronephrotic and ptotic right kidney.

although her child was born one month prematurely. Both mother and child are now apparently well. Although we rather feared that she might have pyelitis again while pregnant, she failed to do so.

FOCI OF INFECTION

While studying the histories of these thirty patients we were impressed by the frequency of tonsillitis, otitis

media and sinusitis in childhood. An analysis of this feature gave us the data which we are presenting in tables 6, 7 and 8.

In the group of nine children who had only one attack of pyelitis, tonsillitis was diagnosed only three times and otitis media once (table 6). On the con-



Fig. 5 (case 19).—At the age of 4 years this patient had one attack of pyelitis due to the colon bacillus. Her present age is 21 and her general health is good. She is married and has one child born in 1934. The pregnancy was complicated by toxemia. The patient now has beta streptococci in the urine. The urogram shows slight hydroureter with redundancy of the upper part of the right ureter.

trary, in the group of twenty-one children who had many attacks of pyelitis, eighteen had tonsillitis and nine had otitis media. Thirteen had a tonsillectomy. Adenitis, pharyngitis, sinusitis, bronchitis and pneumonia occurred in some cases. Three of the patients had an appendectomy, but in no case was the appendix acutely inflamed.

It therefore seems that, in the children with many attacks of pyelitis, accessory infections were much more common than in those who had only one attack. Whether any of these accessory infections might be considered focal in the usual sense cannot be concluded from this study. Thus, we found that residual urinary infections were just as common in the subjects who had had their tonsils removed as in those who had not. In spite of this fact, however, one cannot dispute the equally evident fact that the removal of diseased tonsils is good therapy, even though one cannot promise that it will have any effect on the urinary infection.

CONGENITAL ABNORMALITIES

We found no definite significant congenital abnormality in this group. In two cases there was a marked elongation of the highest calyx bilaterally, a rather spider leg appearance, which one of our radiologists suggested, might be the beginning of polycystic kidney. In another case a kidney was rotated.

SUMMARY

Only two of thirty girls and young women who had pyelitis in infancy and childhood and who were examined on the average, nine and six-tenths years after

their last attack of pyelitis, are now in poor health. Only one has been treated for any urologic disease since her childhood pyelitis. This young woman has been an invalid, owing to chronic urinary infection. She has lost one kidney, and the remaining kidney is hydro-nephrotic and infected.

Twenty-eight have had average good health since childhood, most are in excellent health.

The vast majority had no complaints whatever, symptoms when present, could be elicited only by questioning.

Our follow-up urologic examination showed that seventeen (57 per cent) have definite abnormalities in the urinary tract at the present time.

Of nine who had only one attack of urinary infection in childhood six now show urinary abnormalities.

TABLE 5—Follow Up Study of Subjects Who Had More Than One Attack and Who Now Show Abnormality

Case No.	White Blood Cells	Red Blood Cells	Culture	Phenol sulfon phthal ein	Gen eral Health	Symptoms	Urogram
8	+	Few	Colon bacilli	2+	Good	Pain in right side	Normal
9	Occasional	0	Staphylococci	?	Good	None	Normal
11	Occasional	0	Staphylococci	5+	Excellent	Enuresis	Normal
12	+	0	Dysentery bacilli	50	Excellent	Pain in right side	Infantile kidney
13	0	0	0	4+	Good	Incontinence pain in right side	Dilated right ureter
14	Occasional	0	Colon bacilli	43	Excellent	Pain in right side	Normal
16	0	0	Colon bacilli staphylococci	3+	Excellent	Pain in right side fever with menes	Ureters normal
17	++	0	Colon bacilli	22	Fair	Recurrent pain in left kidney	Functionless shrunken left kidney
18	++	+	Shiga dispar bacilli	20	Bad	Nephrectomy left edema shins and ankles pain in right side	Hydronephrosis right
21	0	0	Staphylococci	60	Good	Enuresis	Blunting calices right suggested dilatation of right ureter
22	0	0	Alpha streptococci	3+	Fair	None	Right kidney rotated stone in ureter

Of twenty-one who had recurring infections in childhood, eleven now have urinary abnormalities.

In general, ten now have mechanical abnormalities, as shown by intravenous urography. Ten have varying numbers of leukocytes in the catheterized urine. In fifteen cases, cultures of the urine are positive. Two subjects have small stones.

In one case we found a functionless kidney in a girl of 15, with practically no symptoms.

Three of these young women have borne children, one has had pyelitis while pregnant.

COMMENT

The results of our examinations surprised us as much as they will probably surprise some of our readers. In this series the after-effects of pyelitis appear much more grave than we had expected them to be. And yet after all only one of the patients was really incapacitated from usual activity, all but two were in average good or excellent health. In other words, the persisting lesions were slight but definite. If it is

reasonable to suppose that the changes which we found on follow-up examination are the persisting aftermath of a childhood infection, then we must adopt a different attitude toward urinary infections in early life. We realize that this study is open to at least two definite criticisms: first, that the series is small and, second, that it may include only the most serious types of

TABLE 6—Focal Infections in Subjects Who Had One Attack of Pyelitis

Case No.	Tonsillitis Abnormality Now	Tonsillitis Present	Tonsilectomy	Otitis
1		0		
2		0		
3		+	+ 1923	+
19		0		
4		+		
30		+	+	
	Subject Now Normal			
5		0	+ 1923	
6		0		
7		0		

TABLE 7—Focal Infections in Subjects Who Had More Than One Attack and are Now Normal

Case No.	Tonsillitis	Tonsilectomy	Otitis
2+	+	+	
26	+	+	
27	+	+	+
28	+	+	
29	+		
10			+
13	+	+	
20	+		+
23	+	+	
24			

TABLE 8—Focal Infections in Subjects Who Had More Than One Attack and Now Show Abnormality

Case No.	Tonsillitis	Tonsilectomy	Otitis	
8	+	+	+	Pneumonia adenitis
9	+		+	
11	+	+	+	Pneumonia dysentery
12	+	+	+	
13	+	+		
14				Appendectomy
16	+	+		Appendectomy
17	+	+		Pansinusitis
18	+	+		Adenoids
21	+		+	Four dilatations
22	+			Colds

TABLE 9—Summary of Follow Up Study Total Cases Thirty

Mechanical Abnormality	White Blood Cells in Urine	Positive Culture	Stone	Congenital Abnormality
10	10	1+	2	Polycystic kidney ? 1 Rotated kidney 1
Slight abnormality				
Severe abnormality (nephrectomy 1 functionless kidney 1)				
Completely normal				
Pyelitis in pregnancy (in 3 cases)				
Appendectomy (with complete relief in 1 case)				

pyelitis in childhood because practically all the children were hospitalized. Both criticisms are probably valid. It remains to be seen, however, what future studies will reveal.

With due regard for these limitations, our study has shown that urinary infections in girls cannot be dismissed casually, as has been our usual custom. They behave just as they do in adults and require just as careful attention. This does not mean that all children with pyelitis should be examined cystoscopically, because half of them even though they have severe

grades of infection, recover completely and have normal urinary tracts afterward. But our study shows that one can never tell just what patients will show complete recovery.

Consequently, we advise that after symptomatic recovery is complete and after the child has been well for several months (long enough for her to throw off the infection completely if she can do so), one should make a follow-up study such as we have made in this series. If a residual lesion is present, it should receive appropriate treatment.

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NONOBSTRUCTIVE DILATATIONS OF UPPER URINARY TRACT IN CHILDREN

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From the etiologic standpoint, dilatations of the upper part of the urinary tract in children may be divided into three groups: (1) those due to mechanical obstruction, most frequently congenital fibrosis, muscular hypertrophy or exaggerated constriction at the points of normal anatomic narrowing, the ureteropelvic and ureterovesical junctions and the vesical outlet, (2) those that are a sequence of neurologic lesions either central or peripheral involving the bladder, such as *poliomyelitis*, *cerebrospinal syphilis*, *spina bifida*, *toxic neuritis* or the less definite dysfunctions classified as *idiopathic*, (3) those in which no obvious cause either mechanical or dynamic can be demonstrated.

The confusion which exists concerning the pathogenesis of the dilatations in the last group is attested by the variety of terms used to describe them. Speculation as to etiology is usually divided between embryologic developmental, intrinsic inflammatory or neurogenic causes. It has included the contention that the dilatation is the result of a persistence of the sausage type of fetal ureter, hypoplasia of the muscularis, fetal ureteral valves which have disappeared, a congenital primary motor functional defect or atony, disturbance either central or peripheral of the nerves supplying the ureter, hypoesthesia and hyperesthesia of the mucosa, inflammatory atony, insufficiency of the ureterovesical valves with vesico-ureteral reflex, vesical spasm, and, more recently, intrinsic ureteral functional imbalance. Some urologists do not admit the existence of so-called *idiopathic dilatation* but contend that, if carefully looked for, obstruction of some sort will be found or at least has existed at some time.

From personal experience and a review of the increasing literature on this subject, the impression is obtained that in many cases dilatation called primary because no obstruction can be found, and therefore assumed to be a developmental or functional defect of the ureteral wall itself, is really secondary.

Although no organic obstruction is present, the dilatation in some instances follows functional imbalance at the ureterovesical junction. Neuromuscular disturbances at this point offer resistance to ureteral emptying and set in motion the same physical and dynamic factors which produce the dilatation in the mechanical obstructions. The urinary tract's reaction

to the stasis of functional retention is no different from that of mechanical obstruction. In advanced neurogenic lesions the process may be hastened by neurotropic changes in the musculature, but in the segmental imbalances such as abnormal activity of the sphincter, the condition may be considered as a true obstruction. The progressive changes are the same.

Confusion has arisen from the tendency of some authors to consider various phases of the same disorder as pathologic entities having separate etiologies. Two types of nonobstructive dilatation which have been described are the congenital megalo-ureter with a thickened, hypertrophied muscularis and the enormously dilated thin-walled, atrophic, atonic ureter.

In the former quite frequently there is little ureteral elongation or tortuosity and at times comparatively little pyelectasis. The muscularis is hypertrophied, and it has been shown that although the dilatation is marked the ureter may be hypertonic. The condition has been compared to *Hirschsprung's disease* and has been attributed to an embryologic developmental defect of the ureteral wall.

In the latter the ureter consists of a dilated atonic tube of connective and fibrous tissue with inflammatory round cell infiltration and very little muscularis. The condition has been attributed to primary atony, to a developmental defect of undergrowth or hypoplasia and to intrinsic inflammatory changes without ureteral obstruction.

Although these conditions may be distinct entities, it has not been sufficiently emphasized that one may be the end stage of the other and that the two may be the result of a reaction to the same etiologic factor, resistance to ureteral emptying from a functional imbalance at the ureterovesical junction. The first represents a stage of compensation with muscular hypertrophy and hypertonicity comparable to the compensating hypertrophy of the bladder due to obstruction of the vesical neck. The second represents the end stage of broken compensation brought about by continuous or progressive stasis or the onset of infection, with inflammatory changes and the introduction of secondary obstructive factors, a clinical picture similar to that seen with any of the obstructive uropathies.

The compensating stage may be short or absent, and secondary changes appear early. On the other hand, because resistance to ureteral emptying is apt to be less unyielding in the functional imbalances of the lower part of the ureter than in the mechanical obstructions, compensating hypertrophy with dilatation confined to the ureter and the absence of elongation and tortuosity are more apt to be found with the neuromuscular dysfunctions and, therefore, have been considered characteristic of nonobstructive dilatation.

The clinical picture and the cystoscopic appearances as observed in four children with varying degrees of hydronephrosis and hydro-ureter are presented to add to the steadily growing evidence that in at least some cases dilatation may be the result of a disturbance of ureteral dynamics or of functional imbalance at the ureterovesical junction.

URETERAL DYNAMICS

The innervation of the ureter is entirely autonomic and in the upper third comes from the renal plexus, in the middle third from the spermatic plexus and in the lower third from the hypogastric ganglion. Ganglion cells are present in the adventitia only and are most abundant in the lower and intravesical portion. Some

are found in the region of the ureteropelvic junction. Activity is greatest in the portion where the ganglions are most numerous. Stripping a segment of adventitia from the whole circumference results in atony and dilatation above that point.

The mechanism responsible for ureteral activity is not thoroughly understood. It can be said that peristalsis is automatic and can be initiated from



Fig 1—Cystogram showing vesico ureteral reflux in a boy of 5 years who died of urosepsis. Despite the autopsy report of no obstruction of the urinary tract, the evidence of chronic distention of the bladder (1) dilatation (2) irregular outlines with cellulæ and (3) vesico ureteral reflux (regurgitant orifices) indicated obstruction in the lower part of the tract or neuromuscular vesical dysfunction.

intrinsic influences in the isolated ureter, that it is partly neurogenic and not the property of smooth muscle alone. Despite its automaticity it is under some control of the autonomic nervous system and can be modified through the sympathetics.

The lower and intramural part of the ureter and the vesical trigon may be considered as an anatomic and physiologic unit. They have a common embryologic origin, which is distinct from that of the rest of the bladder.¹ The muscles of the trigon are formed from a continuation of the longitudinal fibers of the ureters, the lateral extensions forming Bell's muscle and the mesial extensions which unite with those of the opposite side forming Mercier's bar. Fibers from the central muscle of the trigon loop about the intramural portion of the ureter.

Pharmacologically it has been shown that this unit has a common nerve supply and responds to drugs differently than the rest of the bladder.² It receives fibers from the hypogastric nerves only, and stimulation of these nerves produces a strong contraction of the intravesical ureter where the ganglions are most numerous and of the adjacent trigon.³

1. Himmelfarb, Frank, and Wesson, M. B. The Trigon of the Bladder as a Factor in Urinary Obstruction. *Surg. Gynec. & Obst.* 43: 19 (July) 1926.
2. Gruber, C. M. Action of Drugs on Bell's Muscle. *J. Pharmacol. & Exper. Therap.* 35: 412-418 (Dec.) 1925.
3. Learmonth, J. R. The Value of Neurosurgery in Certain Vesical Conditions. *J. A. M. A.* 98: 632-639 (Feb. 20) 1932. Ward, R. Ogier. Intracaval Neurectomy for Hydro Ureter. *St. Barth. Hosp. Rep.* 66: 17 22 1937.

This neuromuscular arrangement has considerable functional significance. Although there is no circular muscle comparable to the anal sphincter, the ureterovesical valve cannot be considered a simple mechanical device due to the obliquity of the intravesical ureter. There is evidence on cystoscopic meatoscopy that it takes a part in ureteral dynamics. There is active relaxation with opening of the orifice synchronous with the termination of the peristaltic wave. This is followed by a period of contraction, or expulsive effort, at which time the orifice is of pinpoint size and is drawn upward and outward with the adjacent trigon or ureteral mound. There may then be partial relaxation followed by a second contraction or expulsive effort, after which there is complete relaxation with a return of the slitlike orifice to its normal position and shape. The process is comparable to the action of the levator ani muscles in completing the act of defecation.

DISFUNCTIONS

It is not illogical to assume that there may be disturbances in ureteral activity which are comparable to those recognized in like mechanisms for the emptying of an involuntary or smooth muscle tube with a sphincter at its distal end, such as the gastro-intestinal tract.

In this discussion I am not concerned with the neuromuscular disequilibrium of renal sympathetic origin, the so-called renal sympathicotonia or hyperdynamic activity, but only with segmental imbalance at the ureterovesical junction, of which two types have been described: (1) increased tonicity or spastic contraction and (2) achalasia. A number of cases of the first type have been reported, and Braasch⁴ has noted two in which the abnormal tonicity was overcome and ureteral drainage improved by a plesacral neurectomy.

The foreign literature contains an increasing number of reports of cases of the second type, or achalasia.⁵ Here there is incoordination between ureteral peristalsis and the relaxation and expulsive activity at the ureterovesical junction. The "law of the intestine," that is,

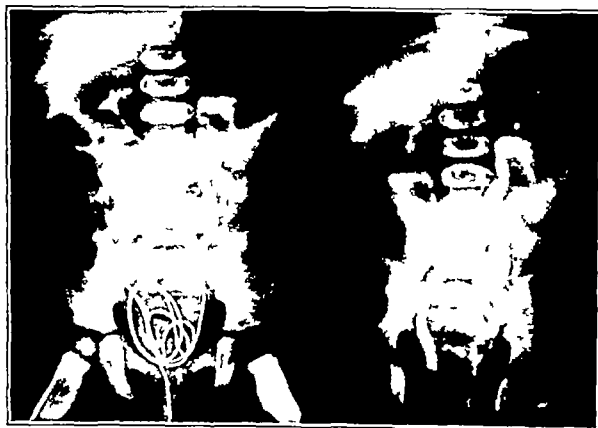


Fig 2—Retrograde urograms of a girl 16 months old with achalasia at the ureterovesical junction. The ureterectasis is out of proportion to the pelvic dilatation although there are some beginning elongation, tortuosity and pyelectasis on the right.

contraction above accompanied by relaxation below, is disturbed. When the peristaltic wave reaches the intravesical ureter there is an absence of active relaxa-

4. Braasch, W. T. in discussion on Berkman, D. M. Chronic Ureterectasis and Infection Apparently Caused by Neuromuscular Dysfunction of the Lower Ureter. *Proc. Staff Meet. Mayo Clin.* 8: 30 (Jan. 11) 1933.
5. Rizzi, Roberto. Ureterectasis Due to Achalasia of Ureteral Opening Without Mechanical Obstruction. *Arch. ital. di urol.* 1: 93-126 (Jan.) 1935.

tion, or opening, and the inert musculature resists ureteral emptying, although probably to a lesser degree than in the mechanical obstructions. As a result there are increased peristaltic activity, muscular hypertrophy, dilatation, stasis and, finally, atony. The onset of infections may hasten these changes and with inflammatory infiltration of the ureter and at the uretero-



Fig. 3 (case 2)—Hydronephrosis on the right side without obstruction in a boy 4 years old. The incomplete injection fails to show the marked dilatation of the entire ureter found at operation.

vesical junction produce secondary obstructive factors which modify the clinical picture and obscure the primary etiology. Whether this dysfunction is the result of abnormal impulses through the hypogastric nerves or whether it is entirely intrinsic is not known.

DIAGNOSIS

The recognition of these functional imbalances is based on a careful exclusion of the commoner and better known lesions, together with positive manifesta-

Criteria for Diagnosis of Ureterovesical Achalasia

A Negative

- 1 Absence of any nervous lesion either central or peripheral involving the lower part of the tract
- 2 Absence of mechanical obstruction at the vesical outlet or posterior urethra
- 3 Absence of stenosis, spasm or incontinence (regurgitant orifice) at the ureterovesical junction

B Positive

- 1 Relaxed easily catheterized ureteral orifice
- 2 Absence of tone about the ureterovesical orifice and in the juxta ureteral trigon
- 3 Disturbance in ureteral dynamics as evidenced on ureteral meatoscopy
- 4 Character of dilatation of the upper part of the tract

tions which are suggestive. In the early or uncomplicated stages the signs are fairly conclusive, but with the development of secondary changes the border line between the functional and the mechanical is less clearly defined. The criteria enumerated in the accompanying table permitted a diagnosis of achalasia of the ureterovesical junction in four cases of varying degrees of ureteral and pelvic dilatation in children.

Neurogenic vesical dysfunctions and mechanical obstructions at the vesical outlet and in the posterior urethra were ruled out by neurologic examination and the absence of urinary symptoms and the cystoscopic and cystographic changes characteristic of these conditions. One child had had myotonia congenita of the flaccid type which was evidently not true Oppenheim's disease because he had fully recovered. He did have marked strabismus, speech defect and other evidences

of nervous instability, but no urinary symptoms or signs of dysfunction of the bladder.

Because of the frequency with which obstruction at the vesical outlet and posterior part of the urethra are overlooked, extreme care was taken to rule out contracture, bars and valves in this region. Cystograms were normal and residual urine was absent in all cases. The absence of obstruction was confirmed by an open operation in one.

Likewise, there was no stenosis, either spastic or organic, or incontinence (regurgitant orifice) at the ureterovesical junction. Catheters and bulbs could be passed easily, and ureteral reflux on cystography was absent. There was no spasm or imbalance of the first type. On the contrary, in three cases there were flabbiness and lack of tone about the ureteral orifice and in the juxta-ureteral trigon. This was an impression gained from its relaxed appearance and the ease with which the orifice could be stretched and the ureteral mound moved about by manipulation of the catheter. On ureteral meatoscopy after the injection of indigo carmine, it was noted that the expulsive action was sluggish and the urine appeared to seep through the immobile and apparently closed orifice. The contraction and subsequent relaxation were weak or absent.

The gaping rigid golf hole type of orifice with vesico-ureteral regurgitation, which is considered by the French as characteristic of nonobstructive dilatations, was not found. It is more apt to be present with obstruction in the lower part of the tract, either mechanical or neurogenic and associated with maturational changes. Even if no obvious obstruction is



Fig. 4 (case 2)—Megalocolon in a boy 4 years old who had megaloureter on the right side without obstruction.

present the cystographic evidence of chronic retention by the bladder, such as dilatation, irregular outline with cellules, and vesico-ureteral reflux rules out functional imbalances of the ureter (fig. 1).

Ureterectasis out of proportion to the pelvic dilatation with comparatively little elongation and tortuosity is supposed to be characteristic of nonobstructive lesions (fig. 2). At times it occurs also with low

mechanical obstruction and may simply represent a stage of compensation in which the ureteral changes have so far protected the pelvis

REPORT OF CASES

CASE 1—A girl 16 months old had had pyelonephritis for several months. The acute symptoms responded to the standard methods of treatment, but the pyuria persisted. A general physical examination showed no gross abnormalities.

Cystoscopically no obstruction in the urethra or at the vesical outlet was seen. There was no residual urine and the cystogram was normal, showing no ureteral reflux. The ureteral orifices were not gaping but two No. 4 French catheters could be passed easily on each side. The ureteral mounds were flabby, and the ureteral orifices could be stretched widely and moved about by manipulation of the catheters. Expulsive action was sluggish, with absence of brisk opening of the meatus, and the urinary jet was weak. The separate functions of the kidney were equal and good. Retrograde urograms (fig. 2) showed bilateral ureterectasis more marked on the right, with some early dilatation of the right pelvis. There was evidently a beginning break in compensation on the right with secondary obstructive factors, elongation and kinking near the ureteropelvic junction.

After the ureteral catheterization the pyuria cleared up. The referring physician on the assumption that if a neuromuscular dysfunction was present it must be a spasm gave atropine in daily doses of one fortieth grain (15 mg.). The pyuria returned and has resisted all internal medication. A presacral neurectomy was recommended but refused.

The observations in this case fulfilled all the standards previously enumerated for a diagnosis of achalasia and the condition was regarded as typical in all respects of a neuromuscular dysfunction of that type.

CASE 2—A boy 4 years old complained of abdominal discomfort and distention. The persistent observation of a few pus and blood cells in the urine and tenderness in the right lumbar region led to a renal study, in which hydronephrosis on the right side was found apparently caused by obstruction at the ureteropelvic junction (fig. 3).

There was no obstruction in the lower part of the tract or at the ureterovesical junction. Because of advanced hydronephrotic atrophy, a nephrectomy was advised. At operation it was evident that the urogram had been misinterpreted because of the obviously poor and incomplete injection. Grossly and histologically there was no obstruction at the ureteropelvic junction, but the ureter was markedly dilated throughout its entire length. In the absence of any obstruction the possibility of functional imbalance of the lower ureter was considered.

Because of persistent obstipation and postoperative abdominal distention a barium sulfate enema was given which showed typical Hirschsprung's disease (fig. 4).

It is now generally accepted that the dilated esophagus of cardiospasm and the dilated bowel in megacolon or Hirschsprung's disease are the result of relaxation of their respective sphincters, the cardiac and anal or pelvic rectal. Successive stages of compensation with hypertrophy of the muscle and dilatation followed by decompensation with atony and atrophy have been observed. Calkins⁶ in 1923 called attention to the analogy of megalo-ureter and megacolon and considered them both to be primary congenital dilatations. Hurst⁷ in 1931 was the first to emphasize that in some cases megalo-ureter might be secondary to relaxation at the ureterovesical junction, and there is increasing evidence to support his contention.

Other authors (Marchand, Gerner, Rath, Roy, Ishikawa and Schmidt⁸) have observed nonobstructive dilatation of the urinary tract associated with Hirsch-

sprung's disease. Lehmann⁸ reported megacolon in a baby, aged 4 years with bilateral hydronephrosis without mechanical obstruction and with marked hypertrophy of the ureteral walls. Still and Thompson⁵ and Priesel⁸ have seen megalo-esophagus with hydro-ureteronephrosis. These observations have led some persons to the conclusion that achalasia is a systemic disease of the sphincters with smooth musculature. The majority are of the opinion, however, that it is a local condition and in the urinary tract may be unilateral or bilateral.

The association in this boy of megalo-ureter and megacolon may be entirely coincidental. However, recent studies at least suggest that the two conditions may be the result of a response to the same type of



Fig. 5—Advanced ureterohydronephrosis on the left side and a functional right kidney following deep diathermic incision at both ureterovesical junctions for achalasia. The subsequent scarring and contraction converted an apparent functional disturbance into a mechanical obstruction.

etiologic factor. A lumbar sympathectomy was followed by marked improvement in function of the bowel.

TREATMENT

The indications for treatment of a condition so little understood and concerning which there have been so little clinical data are not clearly defined.

In the case of functional imbalance of an organ whose nerve supply is entirely from the autonomic system attention would of course be directed to the possibility of correction through surgical treatment of the sympathetics. However, knowledge is incomplete as to nervous control of ureteral activity, the direct pathways of the inhibitor or augmentor impulses, which impulse predominates to produce the dysfunction and how their balance can be modified. In a number of cases of nonobstructive hydro-ureter it has been clearly shown that presacral neurectomy has resulted in improved ureteral drainage and disappearance of the dilatation.⁴ R. Ogier Ward⁹ reported a case and attributed the striking results to the fact that the ureters were freed of abnormal hypogastric impulses.

⁶ Calkins, J. R. Megalo Ureter. *J. Urol.* 9: 315-330 (April) 1923.
⁷ Hurst, A. F. and Jones, I. G. Megalo-Ureter Due to Achalasia of the Ureterovesical Sphincter. *Brit. J. Urol.* 3: 43-52 (March) 1931.
⁸ Quoted by Rizzini.

allowing them to act by the contractile powers which are essentially inherent in all unstriated muscles

Hypogastric overactivity is known to produce spasm at the ureterovesical juncture, but just what abnormal impulse is responsible for the dysfunction without spasm, the dissynchronism of achalasia, is not known. Further studies may show whether the disturbance is intrinsic, peripheral or central and the effect of hypogastric section. Experience may prove hypogastric section to be the method of choice in the treatment of all types of functional imbalance of the lower part of the ureter.

Attempts have been made to overcome the obstruction of the inert sphincter and improve drainage by operation on the intramural ureter. Thomson-Walker² in 1928 did a plastic resection in a case of megalo-ureter attributed to achalasia, enlarging the opening and sewing the ureteral mucosa to that of the bladder. Clinical cure was reported, but no follow-up as to the effect on the dilatation.

Incisions of the junction by the high frequency knife have been reported. To be effective, the incision must not be limited to the mucosal valve but must include the entire thickness of the intramural ureter. This procedure was followed in one of my cases.

In a boy of 4 years with bilateral ureterohydronephrosis without obstruction, a suprapubic cystostomy was done to confirm the absence of obstruction of the vesical neck and permit deep diathermic incision of both ureterovesical junctions. Despite repeated cystoscopic dilatations, scarring and contraction produced resistant fibrosis and converted an apparent functional disturbance into a mechanical obstruction. After three years the right kidney was functionless and there was advanced hydronephrotic atrophy on the left (fig 5).

Hurst⁷ recommended gradual dilation of high degree. Rizzi⁵ suggested forcible dilation or avulsion in preference to plastic resection or incision, as less likely to result in orifices that are regurgitant.

With persistent infection, ureteral dilation, the use of an indwelling ureteral catheter, pelvic lavage and other accepted methods are indicated. With decompensation and secondary obstruction and infection, the indications for nephro-ureterectomy are the same as with the obstructive lesions.

SUMMARY AND CONCLUSIONS

Two types of functional imbalance at the ureterovesical junction are recognized: (1) increased tonicity, or spasm, and (2) absence of the usual active relaxation synchronous with the termination of ureteral peristalsis, or achalasia.

The resistance to ureteral emptying caused by these dysfunctions sets in motion the same physical and dynamic factors which produce dilatation in the mechanical obstructions. Compensation is more apt to occur in the functional imbalances than in the mechanical obstructions, because resistance to ureteral emptying is apt to be less unyielding, hence the observation of ureterectasis out of proportion to the pelvic dilatation and the absence of elongation and tortuosity.

In some cases, congenital idiopathic dilatation considered as a primary embryologic developmental defect may in fact be secondary to a segmental imbalance or abnormal activity of the sphincter.

The association of megacolon and megalo-ureter in one child is of interest in view of the contention that the mechanism of their pathogenesis is similar.

PRIMARY MALIGNANT TUMORS OF THE UROGENITAL TRACT IN INFANTS AND CHILDREN

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Although the incidence of primary malignant tumors of the urogenital tract in the young is comparatively low, the extremely high mortality induced by these lesions makes them a problem of grave clinical concern. Renal neoplasms are far the most frequent of these tumors and merit corresponding attention. Yet the scope of the subject and the limitations of space scarcely permit me to hope that the present discussion will more than direct attention to the newer methods of diagnosis and treatment. In short, the only prospect for lessening the extremely high mortality of these lesions lies in (1) earlier diagnosis by urography, aspiration biopsy or hormone tests (Aschheim-Zondek), as indicated in a particular case, together with (2) intensive preoperative and postoperative radiation therapy by the fractional dose method (Coutard). The data here presented are based on the clinical and/or pathologic study in seventy-seven cases of primary malignant urologic disease in infants and children between the ages of 3 days and 9 years.

TUMORS OF THE KIDNEY

I could find but two reported instances of carcinoma in children (Philip and Salin,¹ Cathcart²).

Hypernephroma accounts for from 2³ to 11⁴ per cent of malignant renal tumors in children and appears to be more common in girls. Recent studies of hypernephroid tumors by biologic assay have shown a content of cortical hormone (adrenal cortex extract) comparable in amount to that found in the normal adrenal.⁵ These studies, together with such symptoms as fever, pigmentation of the skin and changes in blood volume,⁶ tend to support the Grawitz theory of adrenal cell rests as the origin of these tumors. Hypernephroma metastasizes by the lymphatics, blood stream and direct extension, the lungs and the long bones are most apt to be involved. In a fifth of the patients, metastases exist when the patient first presents himself. Hematuria is the dominant early symptom of hypernephroma in children, quite in contrast to the initial symptom of a mass in the loin such as occurs in Wilms' tumor. Sometimes the passage of large blood clots produces renal colic, but otherwise pain in the loin is due chiefly to distention of the renal capsule by the growth. When the diagnosis is made early and prompt nephrectomy follows, the prognosis is slightly better than for Wilms' tumor. Hematuria or a mass in the region of the kidney will direct attention to the urinary tract, but the diagnosis will rest chiefly on retrograde pyelography. The results of irradiation are not as phenomenal

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1 Philip J. A. and Salin H. Epitheliome d'un rein chez un enfant de 21 mois. *Bull. et mem. Soc. anat. de Paris* 11: 336, 1913.
2 Cathcart Edward. *Proc. Mayo Staff Meet. Mayo Clin.* 4: 347 (Nov. 27) 1929.

3 Personal data.
4 Bothe A. E. Hypernephromata. *Experimental and Clinical Research Ann. Surg.* 89: 57 (July) 1926.

5 Rowntree L. G., Greene C. H., Swingle W. W. and Fifer J. J. Addison's Disease: Experience in Treatment with Various Surgical Preparations. *J. A. M. A.* 96: 231 (Jan. 24) 97: 1446 (Nov. 14) 1931.
6 Swingle W. W., Pfiffner J. J., Vars H. M., Batt J. A. and Parkin W. W. Function of Adrenal Cortical Hormone and Cause of Death from Adrenal Insufficiency. *Science* 77: 58 (Jan. 13) 1933.

in patients with hypernephroma as in those with Wilms' tumor, yet such therapy may advisedly be employed both preoperatively and postoperatively. Chief reliance must be placed on early diagnosis and nephrectomy.

Embryonal adenomyosarcoma (congenital mixed tumor, Wilms' tumor) is the commonest neoplasm of the urinary tract and abdomen in the young, in whom it constitutes about a fifth of all tumors. Because of the heterogeneous histology of these embryonal growths, they have been variously described as adenosarcoma, embryonal sarcoma, myxosarcoma, chondromyosarcoma, rhabdosarcoma, rhabdomyoma and lipomyoma. Seventy-five per cent of Wilms' tumors appear before the fifth year, and two thirds appear before the third year, which is the average age at which the tumors are first recognized. These growths have been observed in the fetus, I have seen one in an infant aged 3 days and have performed nephrectomy on an infant aged 6 weeks. After the seventh year hypernephroma is more apt to occur than embryonal adenomyosarcoma. Statistics suggest that the tumor has a slight predilection for the left side and for males.

The embryologic etiology has been admirably discussed by others, suffice it to note here that the genesis of these tumors is satisfactorily explained only on embryologic grounds. The prevailing theories (of Ribbert,⁷ Wilms,⁸ Birch-Hirschfeld,⁹ Ewing,¹⁰ Muus¹¹ and Dean and Pack¹²) vary chiefly in the hypothecated time at which the embryonal tumor anlage develops. Dean and Pack expressed the belief that the nature of the tumor indicates the period of formation of tumor anlage. Thus tumors characterized by primitive renal tubules and glomeruli originate at the stage of blastema or nephrotome, but most renal tumors found in children show such varied structure that these writers explained their origin at an earlier period, i.e., before the urogenital ridge which contains the multipotent cells has formed the nephrotome.

The size, rate of growth and weight of the Wilms tumor vary greatly, the growth may account for half of the body weight. Enlargement of the tumor frequently produces compression symptoms, especially of the bowel. In an 18 months old boy with a large Wilms' tumor on the left side, the distal two thirds of the compressed pancreas resembled the tongue in a shoe.

On section Wilms' tumors may be soft, brainlike, gelatinous, grumous, semitranslucent, edematous or fibrous, with or without cystic areas, grayish pink, grayish yellow or white, and areas of hemorrhage or necrosis may be seen. A fifth of the patients show metastases. The spread is characteristically through the blood stream, yet by lymphatic or direct extension the liver, spleen, spine, intestine, diaphragm and lungs may be invaded. Less frequently the skull, brain, scapula, ileum, abdominal and lumbar muscles and even the corpora cavernosa have been the site of metastases. With extrarenal extension, the retroperitoneal lymph nodes are usually involved. Metastases were found in fifteen of thirty-seven cases of renal tumor observed

in hospitals¹³ with which I am or was formerly associated, in fifteen additional cases in this series the presence or absence of metastases was not recorded.

Microscopically these tumors show a variety and complexity of structure, striped and unstriped muscle, elastic fibers, cartilage, bone, adipose tissue and mucoid stroma, all of which are normally foreign to the renal parenchyma, are commonly described. Tubular structure is sometimes seen and even abortive attempts at glomerular formation. In rapidly growing tumors the fragile capillaries rupture easily to produce intratumoral hemorrhage. In one of my patients, an 18 months old boy, an enormous renal tumor appeared overnight, the specimen showed widespread fresh hemorrhage in the center of the growth. Thus, the observation of sudden enlargement of renal or testicular neoplasms suggests hemorrhage into the growth.

Symptoms—A tumor in the region of the kidney is the usual early symptom of Wilms' tumor and is generally noted accidentally by the parent or the nurse. In one case a 4 year old boy first called attention to his renal neoplasm. As the growth enlarges the child becomes pot bellied. Compression by the enlarging tumor may produce marked gastro-intestinal respiratory or cardiac disturbances, with vomiting, jaundice, anorexia, cachexia, anemia, dilatation of the superficial abdominal veins, cutaneous petechiae, varicocele, diarrhea, constipation, cyanosis or pleural effusion. In a 13 months old boy I operated on at the Babies Hospital, a large renal rhabdomyosarcoma on the left side produced a fair sized varicocele on the same side, which disappeared after nephrectomy.

Pain occurs with about 35 per cent of Wilms' tumors and results principally from capsular tension consequent to the enlarging parenchymal growth. Pain due to mass weight and abdominal pressure is also frequent. Hematuria does not occur until late and in only about 15 per cent of cases, quite in contrast to its high incidence in renal hypernephroma. Pyuria and disturbances of urination have been noted in from a third to a fourth of the cases. Half of all patients with renal neoplasm have fever, which may be high continuous, low continuous, or low remittent and may appear early in the course of the disease or terminally. The mechanism of this reaction is not understood, but it is observed in children who have other types of malignant neoplasm, such as lymphosarcoma or endothelial myeloma.

Diagnosis—This is strongly suggested by palpation of a mass in the renal area. A renal tumor grows forward, a protruding mass in the posterior ilio-costal space rules out renal neoplasm and suggests neuroblastoma of the adrenal. Intravenous or excretory urographic studies may suffice to make the diagnosis, but interference with the renal function by the tumor often prevents the obtaining of a satisfactory excretory urogram. Yet the method will assist one in determining that the opposite kidney is sound. This is of vital interest, especially when nephrectomy offers hope of cure. Nevertheless, only a retrograde pyelogram can be relied on for a clear urographic demonstration of the pelvis of a tumor-bearing kidney in a child. Because the problem is one of life and death and because retrograde pyelography can be performed with

7 Ribbert. Ueber ein Myosarcom striocellulare der Nierenbeckens und des Ureters. Virchows Arch f path Anat. 106 282 1886.

8 Wilms' Max. Die Mischgeschwulste der Niere. Leipzig. A. Georgi 1899. vol. 1, p. 1.

9 Birch-Hirschfeld F. V. Beitrage zur pathologischen Anatomie der Nierengeschwulste. Beitr z path Anat u z allg Path. (Ziegler's) 24 343 1898.

10 Ewing James. Neoplastic Diseases, ed 3. Philadelphia. W. B. Saunders Company 1933.

11 Muus A. R. Ueber die embryonalen Mischgeschwulste der Niere. Virchows Arch f path Anat 255 401 1899.

12 Dean A. L. Jr and Pack G. T. Embryonal Adenosarcoma of the Kidney. J. A. M. A. 98 10 (Jan 2) 1932.

13 Bellevue New York Nursery and Childs Babies and Mountsinide hospitals. Extensive statistical data from these hospitals concerning urogenital tumors in children appeared in the author's book Pediatric Urology. New York. Macmillan Company. August 1937.

negligible risk, the positive diagnosis should rest on data obtained by this method. In renal tumor the pelvis may be completely obliterated, but as a rule the diagnosis rests on urographic demonstration of the bizarre changes in pelvic conformation consequent to (1) mechanical distortion of the pelvis by the new growth, (2) obstruction of the upper part of the ureter or the pelvic outlet and (3) ulceration resulting from infection or necrosis. In performing the urologic examination it is most important to determine that the better kidney is able to support life. Moreover, at the time of examination it is equally important to determine the existence of metastases—by abdominal and cervical palpation as well as by roentgenography of the chest.

Differential Diagnosis—The conditions from which renal tumor must be differentiated are chiefly adrenal tumor, hydronephrosis, solitary cyst, congenital polycystic disease, extrarenal mass or tumor, Hodgkin's disease, hepatic or ovarian tumor, splenic, fecal, intestinal or pancreatic tumor, mesenteric or retroperitoneal cyst, tuberculous peritonitis and perirenal abscess. Of these, neuroblastoma of the adrenal and hydronephrosis merit most consideration. According to my experience, tumors of the adrenal occur a third as often in children as tumors of the kidney, and the urographic demonstration of a kidney compressed well downward and showing marked pelvic distortion is at least suggestive of adrenal tumor. Yet the tumor may be simply a massive one of the upper portion of the kidney. On the other hand, in a boy of 10 months referred for examination because of "renal tumor," the growth was found to be a neuroblastoma springing from the left sympathetic chain at the level of the fourth lumbar vertebra. The tumor mass was approximately 12 cm in diameter and by urography was demonstrated to push the kidney upward. Hydronephrosis is doubtless the commonest abdominal tumor in children and when simulating renal neoplasm usually results from ureteropelvic obstruction, either congenital stricture at the ureteropelvic junction or vascular obstruction of the ureter at the pelvic outlet. The pyelogram should make the differential diagnosis evident.

Aspiration Biopsy—If there is still doubt as to the diagnosis, an aspiration biopsy may be performed. The center of the tumor mass is determined by triangulation from a study of the urogram, and into this central area an 18 gage needle attached to a 5 or 10 cc syringe is plunged. Moderate suction is applied as the needle is introduced, and when it is at the desired depth the suction is increased sufficiently to draw out tissue for microscopic examination. At the Memorial Hospital for the Treatment of Cancer and Allied Diseases this diagnostic procedure has not been observed to influence adversely the subsequent clinical course.¹⁴

Prognosis—When the usual surgical treatment of nephrectomy only is employed the mortality is about 95 per cent. Only five of fifty-five patients lived longer than one year, a mortality of 91 per cent. The average life expectancy following nephrectomy alone is eight months, recurrences are usually found after four months. A child surviving a year without evident metastases is probably cured. These figures consistently stand in all the larger series of cases reported. Nor will this mortality be reduced without the employment of intensive preoperative and postoperative radiation therapy.

Treatment—Radiation Therapy The therapeutic results consequent to the greatly increased tissue dose which it is possible to obtain by the multiple (daily) fractional dose method¹⁵ should be more widely appreciated. In fact, at the Memorial Hospital in New York recent observations on radiation therapy in the treatment of testicular tumor (which closely simulates biologically the activity of Wilms' tumor) have shown that a fourth (29 per cent) of the inoperable tumors were apparently cured by this means alone.¹⁶ Moreover, the development of and improvement in radiation therapy as applied to urogenital neoplasm constitute one of the major recent advances in urologic therapeutics. The technical details of the therapy should be entrusted to a competent radiologist. Here only the generalities can be indicated. As a rule portals 9 or 10 cm in diameter are large enough for the treatment of renal tumors in children. Anteroposterior, postero-anterior and lateral exposures should cover not only the known tumor-bearing area but the lower part of the abdomen, the chest and the mediastinum if they are known to contain metastases. A total dose of from 1,200 to 1,500 roentgens to each portal may be equally divided into daily doses (usually except Sunday) for three or four weeks. In the employment of radiation in treatment of the young, due caution must be observed, and vital organs, such as the liver, spleen and opposite kidney, must be protected. Reduction of the dose or even temporary cessation of treatment may be demanded by reactions—febrile hematopoietic (anemia, leukopenia) or gastro-intestinal (nausea, vomiting, diarrhea). If the child stands the treatment well, the total dose can be increased or the therapeutic period prolonged, but in any event the young patient must be closely watched, the intensity of the local cutaneous reaction, the regression of the tumor and the general tolerance being noted especially.

Operation (Nephrectomy) After the preoperative irradiation the optimum time for operation appears to be from three to six weeks. With irradiation the tumor becomes markedly reduced in size, but if nephrectomy is not performed within six weeks it recurs, and growths which follow irradiation are less radiosensitive than the original growth, they may even become irradiation fast and the opportunity for cure may be lost.

The advisability of nephrectomy in the presence of metastases merits consideration. Although fully aware of the usual hopeless prognosis when metastases have developed, I am led by the excellent results which have been obtained by well planned irradiation in the treatment of teratoid tumors of the testicle to give every child with Wilms' tumor the benefit of irradiation and nephrectomy even though metastases are known to exist. In short, only by treating the many will one cure the few.

Postoperative Irradiation Beginning three or four weeks after removal of the tumor a course of irradiation similar to the preoperative course and including irradiation of the metastases is employed. As a rule, if cure is to be achieved it will result from the treatment already outlined. Yet if the child will tolerate it, a second postoperative course of irradiation for therapeutic fortification may be given six weeks after

¹⁵ Coutard H. Zusammenfassung der Grundlagen der Strahlentherapie des Kindes. *Strahlentherapie* 2: 1930.

¹⁶ Dean A. L. Jr. Treatment of Teratoid Tumors of Testis. *Radium and Roentgen Ray J. Urol.* 21: 23 (Jan.) 1929.

¹⁴ Barninger B. S. Personal communication to the author.

completion of the first, and a second course must be employed when there is evidence of recurrence of the tumor or metastasis.

The following case illustrates the use of the method described.

In a boy of 13 months a Wilms tumor estimated to be 10 by 10 by 15 cm in size was demonstrated in the left loin. Preoperative irradiation reduced the growth to slightly larger than the size of a normal kidney, a total of 4,500 roentgens was given anteroposteriorly, postero anteriorly and laterally in divided doses daily except Sunday for two weeks. Despite the child's tender age there was no unfavorable reaction to the irradiation, and three weeks after the last exposure nephrectomy was performed. No local metastases were observed at operation, and the postoperative course was uneventful. Postoperative irradiation by divided daily doses was begun three weeks after nephrectomy, a total of 2800 roentgens being given in ten days. The child was apparently cured fifteen months later, abdominal examination with anesthesia revealed no evidence of recurrence, and roentgenograms of the chest were normal.

In the case of Wilms' tumor, failure of recurrence in six months materially improves the prognosis (q v), for the average life expectancy following the initial discovery of the tumor is eight months.

Yet not all children do as well as this boy. For example, in a 5 year old girl with a comparable Wilms tumor on the left side, who was subjected to similar treatment, a profound reaction (febrile and gastrointestinal) to the irradiation required cessation of radiotherapy after 1,210 roentgens had been given. Operation disclosed local and intraperitoneal metastases. Tumor-bearing regional lymph nodes appeared caseous (irradiation necrosis). The child died of tumor four months after nephrectomy and an aborted attempt to give postoperative irradiation. Here an extensive lesion plus hypersusceptibility to irradiation defeated treatment.

Age is no contraindication to nephrectomy. Deming¹⁷ performed this operation on an infant aged 29 days, and I have on an infant aged 6 weeks. The latter patient is of special interest because of her age and because apparently she is one of the relatively few who have been cured.

In a 5 weeks old girl referred by Dr Charles Gilmore Kerley, a mass was first noted in the right loin at the age of 3 weeks. A complete urologic examination was carried out at 5 weeks. The diagnosis of Wilms' tumor was made, and at 6 weeks nephrectomy was performed. An embryonal adenomyosarcoma weighing 500 Gm was removed. The child was apparently cured three years later. In this case the question of preoperative irradiation was seriously considered, but two radiologic consultants advised against it in view of the child's extreme youth.

In a boy of 13 months an enormous rhabdomyosarcoma of the right kidney was removed. On section the gross appearance strongly resembled that of uterine fibroids. The boy was alive and well four years later. Except for these three apparently cured patients and two additional patients operated on by others, all fifty-five children with malignant renal tumor died.

Tumors of the renal fibrous capsule are extremely rare. Three fourths of the ninety-two reported cases were in girls, and most of the patients were under 10 years of age. These lesions are predominantly sarcomatous and are likely to be correctly recognized only at operation or by histologic examination.

Tumors of the renal pelvis are so scarce in children as to merit scant clinical consideration, Perlmann¹⁸ reported a case of pelvic epithelioma in a child of 3 years.

Tumors of the ureter in children are almost exclusively secondary to renal tumors and even so are seldom seen.

TUMORS OF THE BLADDER

Tumors of the bladder are most unusual in children and are predominantly of mesodermal origin, papilloma has been reported, but no undisputed instance of carcinoma. In 1924 Deming¹⁹ found but sixty-four authentic cases, to which he added two, I know of some ten cases which have occurred since that time, three of which are unreported. More than half of tumors of the bladder in children are sarcomas, a few are myxomas and the remainder are fibroids, polyps, rhabdomas, dermoids, myomas or papillomas.

The symptoms of tumor of the bladder are consequent to obstruction or neoplastic ulceration. Thus there are dysuria, frequency, often burning and hematuria, and, with infection, the urine is cloudy with pus. A palpable vesical mass may be either the growth itself or the result of complete urinary retention consequent to tumorous obstruction. During the past year, at Bellevue Hospital myxosarcoma arising from the floor of the bladder was observed at autopsy in a 4 year old boy.

The diagnosis of vesical tumor is made by cystoscopy, but to date no case has been recognized sufficiently early to justify radical treatment. Cystography may show a filling defect caused by the growth.

Treatment—It is possible that satisfactory results may some day be obtained by (1) the employment of a modification of the Coutard therapeutic method of irradiation, (2) direct interstitial irradiation by radon implantation or (3) ureterosigmoidostomy followed by total cystectomy. Because of the extremely high malignancy of tumors of the bladder and the consequent radiosensitivity, it would seem that the best results might be expected from irradiation alone or at least from combined radiation and surgical therapy.

TUMORS OF THE PENIS AND THE URETHRA

Malignant growths of the penis and the urethra are almost unknown in the young. Urethral polyps are not uncommon in children and merit consideration because they may produce obstruction and may be precancerous lesions. In a 6 year old boy subjected to urologic examination because of persistent enuresis, a pedunculated tumor 12 mm in diameter, fastened by a broad pedicle 1 cm long, was found to spring from the roof of the posterior part of the urethra directly above the verumontanum, to pass back into the outlet from the bladder, where it produced a ball valve obstruction. The growth was removed through the opened bladder.

Rhabdomyoma and carcinoma of the scrotum in children have been described. I saw an extensive hemangioma of the left side of the scrotum in a 6 months old boy, consent for treatment was refused. Radical excision is the usual indicated therapy, although freezing with carbon dioxide snow or irradiation (with testicles protected) may be employed.

¹⁸ Perlmann S. Fibro-Epithelial Tumors of the Kidney Pelvis. *Deutsche Wochenschrift für Chirurgie* 106: 378, 1926.

¹⁹ Deming C. L. Urinary Bladder Tumors in First Decade of Life. *Surg. Gynec. & Obst.* 39: 432 (Oct.) 1924.

¹⁷ Deming C. L. Congenital Sarcoma of the Kidney in a Child of 29 Days. *J. A. M. A.* 80: 902 (March 31) 1923.

TUMOR OF THE TESTICLE

Approximately 150 cases of tumor of the testicle in children have been reported, I have seen the condition but once, in a 13 months old boy. Of over 300 patients treated by Dean¹⁶ for teratoma of the testis, only two were boys 3 and 4 years of age. There is no predilection for one side or the other. Examination of the growths shows them to be of congenital or embryonal origin, they have been observed at birth. According to Dean the cryptorchid testicle is 200 times as likely to become malignant as the normally situated organ.

Testicular tumors are now generally classified as embryoma and seminoma. The embryonal tumor is the one characteristically seen in children and commonly presents structures indicative of a tridermal origin, practically every tissue of the body may be represented in a single tumor. Seminoma—a tumor presumed to be derived from cells of the spermatogenic system—is practically unknown in the young. Rare instances of adrenal rests as a site of malignant testicular tumor have been reported, as have dermoid cysts within or attached to the testicle. Testicular tumors metastasize early and widely, at first through the lymphatics to the iliac and the lower lumbar muscles, with subsequent vascular invasion and hematogenous spread to distant structures such as the liver, brain, lungs or bones. Enlargement of the testicle is the earliest manifestation, but by the time this is noticed an abdominal metastatic mass may exist. Growth of the tumor is rapid, and in a few months the classic sequence of testicular tumor, visceral metastases and death, occurs.

Diagnosis—The correct diagnosis is suggested by palpation of a hard or enlarged nodular testis. In palpating the enlarged testicle one should avoid squeezing, especially when tumor is suspected, lest malignant cells be forced into the circulation. Abdominal palpation for metastases should not be neglected, cervical or cranial metastatic nodules may also be palpated.

Hydrocele, spermatocele, testicular contusion, tuberculosis, syphilis, hernia or congenital cyst of the scrotum must be considered in the differential diagnosis. Not only can these various conditions usually be ruled out by physical examination, but a modified Aschheim-Zondek test for the identification of testicular tumors performed under most sensitive conditions (with white mice) will almost always correctly identify the malignant lesion.²⁰ Most testicular tumors provoke the elaboration of the follicle-ripening hormone of the anterior pituitary gland which is eliminated in the urine. By the injection of this urine into young virgin mice, the estrual cycle is induced. Finally, should the diagnosis still remain dubious, aspiration biopsy will enable one to identify a malignant growth.

Prognosis—This is always bad, and only by the employment of the method outlined in the following paragraph can one hope to reduce the high mortality which now generally exists. By this method the usual mortality for adults, 95 per cent, has been reduced at the Memorial Hospital to 14 per cent for patients in whom the tumor is operable, and 29 per cent of the patients in whom the tumor was inoperable were apparently cured by irradiation alone.¹⁷

Treatment—The fundamentals of treatment of testicular growths in boys are those which have been described for the treatment of renal tumor. Intensive

preoperative (orchidectomy) and postoperative irradiation given by the divided dose method and applied to the local growth (500 roentgens), isolaterally to the abdomen and to pulmonary or other metastases if they are known to exist. When the testicular tumor has diminished it may be removed with local anesthesia, but, as indicated in the preceding paragraph, in over a fourth of adults with inoperable testicular tumor Dean obtained apparent cure by radiation therapy alone.¹⁶

The technic and the amount of radiation therapy are usually best determined by a skilled radiologist. Dean recommended the following treatment for a child with primary tumor of the testicle and without demonstrable metastases.²¹

Assuming a primary tumor 4 by 4 cm. in size, use high voltage roentgen rays at a distance of 50 cm. and with a portal of 6 by 6 cm. Protecting the opposite testis as well as possible with leaded rubber, give 500 roentgens to the tumor. This dose is twice repeated with a day intervening between treatments. Measurements should be taken at short intervals, and in from two to four weeks, or when the testicle has regressed to approximately normal size, an orchidectomy should be performed.

Whether or not metastases are palpable in the pelvis or abdomen, these areas should be treated. I would use four portals, the lower and the upper part of the abdomen, anterior and posterior, on the same side as the tumor. Two hundred and fifty roentgens should be given each portal. Two portals should be treated daily—those opposite each other. By this is meant that the lower abdominal portals, anterior and posterior, should both be treated the same day with 250 roentgens until from 2,100 to 2,400 roentgens has been given each portal (i.e., eight or nine exposures each). The upper abdominal portals, front and back, should be similarly given the same total dose. It is notable that a day of rest should be allowed between the treatments of each portal, i.e., the lower abdominal portal should be treated one day and the upper abdominal the next. The size of the portals, of course, depends on the size of the patient, but treatment should be given from the testis up to and including the part of the epigastrium which underlies the xiphoid process, and the treatment should extend at least an inch beyond the midline.

Perhaps two or three of these cycles would suffice but no definite statement can be made concerning this point. Whether or not further treatment is given depends entirely on the response of the patient, the condition of the skin and other observations of the urologist.

It must be emphasized that the general condition of the patient must be carefully watched and that close observation must be made of the condition of the blood, especially the white cells.

An illustrative case has been reported by Dean. A boy of 4 years had a hard, rapidly growing swelling on the left side of the scrotum for six weeks. Orchidectomy revealed a spindle cell sarcoma. When he was admitted to the Memorial Hospital, a pea-sized tumor was found near the lower end of the operative scar. The scrotum, groin and left part of the abdomen were heavily irradiated with the radium pack. The nodule soon disappeared, the boy was well fourteen years after treatment.

Tumors of the tunica vaginalis, epididymis and spermatic cord are uncommon and frequently benign, malignant growths are usually sarcomatous.

TUMORS OF THE PROSTATE

Tumors of the prostate are extremely rare and in children are almost exclusively sarcomatous. Symptoms are those of urinary obstruction, often with hematuria, and ultimately chronic complete retention. The

²⁰ Ferguson, R. S. Quantitative Behavior of Prolan A in Teratoma Testis. *Am. J. Cancer* 58: 265 (June) 1933. Pathologic Physiology of Teratoma Testis. *J. A. M. A.* 101: 1933 (Dec. 16) 1933.

²¹ Dean, A. L. Jr. Personal communication to the author.

diagnosis is made by urologic examination, in which the rectal examination reveals a large mass filling the prostatic region and sometimes compressing the bowel. The mass may be firm or semifluctuant. It is notable that in most of the reported cases of prostatic sarcoma the surgeon operated after an erroneous diagnosis of prostatic abscess had been made. To date the outcome has been uniformly fatal. Only by early recognition and radical treatment is there a chance for cure. Radiation is of palliative value. I have seen but three cases, in boys 4, 17 and 18 years old, respectively.

The 4 year old boy, referred by Dr Harry Morton and first seen Oct 15, 1936, had had urologic symptoms for six weeks. There had been rapidly increasing dysuria for two weeks and acute retention for the past month, during most of which time an indwelling catheter had been employed. Rectal examination disclosed a slightly irregular firm, fixed mass, about 10 by 10 cm, filling the prostatic and vesical region. Cystoscopy showed multilobular intusion of the tumor at the neck of the bladder and over the trigon. Suprapubic cystotomy was performed to establish permanent drainage of the bladder. Through the open bladder two pieces of tissue approximately 1.5 cm in diameter, translucent and closely resembling thick yellow gelatin, were enucleated from the prostatic mass. Histologic examination showed myxoliposarcoma (Ewing). Intensive radiation therapy daily except Sunday, 157 roentgens a day (3,200 roentgens in three weeks) applied to the prostate anteroposteriorly, antero-obliquely, postero-anteriorly and twice perineally, reduced the tumor two thirds in size. There was practically no irradiation sickness. One month after the completion of the first course a similar course of irradiation was given. The tumor diminished still further, and free voiding permitted the suprapubic tube to be clamped off, I do not dare remove it. It seems unlikely that benefit in this case is more than transitory, yet irradiation offers the only hope.^{21a} The case is here recorded (1) to illustrate the beneficial effects of radiation therapy and (2) because it is unique or at least one of the very few cases of prostatic sarcoma in a child to be treated by irradiation.

TUMORS OF THE ADRENAL

Embryologically and endocrinologically the adrenal must be considered as intimately related to the urogenital tract. Benign adrenal tumors are occasionally seen post mortem in the young but are seldom encountered clinically except in rare instances of cortical or subcortical growth in which development of the genital tract and sexual precocity are striking manifestations. The important malignant adrenal tumor in children is the neuroblastoma or neurocytoma, and according to my observation it occurs fully a third as often as malignant renal tumors. Histologically the neuroblastoma is composed of embryonal nerve cells and fibrils. The latter are often arranged in rosettes, sometimes in longitudinal bundles. The metastases generally simulate the primary growth, but round cells predominate.

Neuroblastomas grow rapidly and not only push the kidney down but are likely to protrude posteriorly—a point differentiating them from renal tumors. The growths metastasize rapidly, principally through the lymphatics. Various types of metastatic tendencies have given rise to clinical designations such as (1) a variety showing extensive hepatic metastases (Pepper²²), (2)

a type characterized by extensive metastases to the skull and the orbit (Hutchison²³) and (3) a form showing only a local enormous central interrenal or midabdominal mass.

The diagnosis will most often be made at the operating table, although the urographic characteristics of adrenal tumor, as described in the paragraph on the differential diagnosis of renal tumor, may enable the clinician to recognize the condition preoperatively. It is possible that periadrenal pneumography²⁴ may eventually prove of as much diagnostic value for children as it has for adults with adrenal enlargements.

Treatment—Removal of the growth is the treatment, but in the case of adrenal tumor, too, preoperative and postoperative intensive radiation therapy by the divided dose method, as previously described, appears to offer the only hope for the reduction of the extremely high mortality. Rarely, the tumor can be shelled out, more often it is found to surround the great vessels of the abdomen. The operative mortality is from 30 to 40 per cent, of twenty surgically treated patients in New York City, whose cases I studied, nineteen died.

SUMMARY

For successful treatment of malignant tumors of the urogenital tract in children, early diagnosis is imperative, urography, aspiration biopsy in the case of renal growths and the modified Aschheim-Zondek test in the case of testicular tumors are important. Radiation therapy merits first place in the immediate treatment of these tumors, especially in the young, and only by its intensive employment—preoperatively and postoperatively by the divided daily dose method—together with judicious surgical intervention, can one hope to reduce their appalling mortality.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS WHARTON, GRAY AND GUILD,
DR HEPLER AND DR CAMPBELL

DR VINCENT VERMOOTEN, Johannesburg, South Africa. "Achalasia" of the ureter is a term which has recently been used in Britain to describe the dilated ureter in children, presupposing that it is a condition similar to Hirschsprung's disease. The word is derived from the Greek *α*, negative, and *χαλασις*, relaxation, and should therefore be used to indicate the failure to relax on the part of a bodily opening such as a sphincter or the esophagus. Dr Hepler uses the term to indicate the incoordination between peristalsis on the one hand and the relaxation and expulsive activity at the ureterovesical junction on the other. Also he bases his thesis on the existence of a sphincter at the ureterovesical junction, a fact which I am inclined to doubt. That the condition may actually exist is probably correct, but I feel that the term 'achalasia' is an unfortunate choice, and so too is his advocacy of sympathectomy for the relief of the condition. He refers particularly to Berkman's report in which a case of the exactly opposite type of segmental neuromuscular imbalance (increased tonicity or spastic contraction of the ureterovesical junction) was relieved by sympathectomy. It is difficult for me to understand how the same operation can relieve two conditions of a distinctly opposite nature. As for the sphincter at the ureterovesical junction, Dr Hepler states that according to the work of Hinman and Wesson the lower and intramural ureter and vesical trigon may be considered as an anatomic and physio-

21a. This child died of his tumor shortly after this paper was submitted for publication.
22. Pepper, William. A Study of Congenital Sarcoma of the Liver and Suprarenal with Report of a Case. *Am J Sc* 121: 287, 1901.

23. Hutchison R. On Suprarenal Sarcoma in Children with Metastases in the Skull. *Quart J Med* 1: 33, 1907.
24. Cahill G F, Ioch R F, Karok R, Stout A P and Smith F M. Adrenal Cortical Tumor. *Surg Gynec & Obst* 62: 287 (Feb No 2 A) 1936.

logic unit. Assuming this to be correct, one would therefore be surprised if the ureteral orifice remained patently open or closed and did not retract or dilate as the normal peristaltic wave passes down a normal ureter. If one can pass one or two very small catheters through a ureteral orifice into a ureter the lumen of which is ten or more times greater, it does not necessarily indicate that there is no actual mechanical obstruction at the ureterovesical junction. If there should be a ureterovesical junction the diameter of which was, say, 0.5 cm. and an associated ureter the diameter of which was, say, 3 cm., that junction would be, relatively speaking, an obstruction to the free flow of urine from the ureter, at least far more so than if the lumen of the ureter was also 0.5 cm. in diameter. This would be all the more true if the ureter itself was somewhat atonic. Can one therefore find some explanation other than a segmental neuromuscular imbalance for these dilated ureters with no apparent obstruction at the ureterovesical junction? I feel that a large percentage of the so called achalasia of the ureter can be explained if one is willing to accept Chwalla's work on the embryology of the ureter, which has apparently been overlooked by Dr. Hepler and by other urologists who have written on this subject.

DR. HENRY F. HELMHOLZ, Rochester, Minn. I was particularly interested in the paper of Drs. Wharton, Gray and Guild because it represents the sort of thing that pediatricians have been trying to call attention to, namely, the importance of a complete urologic examination if urinary infections cannot be cleared up. I do not believe that we were told in how many of these cases the infection persisted, and I, for one, and the urologists have been constantly calling to the attention of the medical men that a patient should not be discharged until one knows that the infection is actually cured. By cured I do not mean the absence of pus in the urine but the absence of bacteria determined by culture after discontinuation of the treatment. I think that this is the all important point in the treatment of pyelitis. Only in this way can one be sure that there will not be a series of cases that have gone along the way this series has, so that after a period of anywhere from five to fifteen or twenty years these infections still persist. I feel sure that those cases in which the urinary tracts were normal could have been cleared up with intensive therapy even back in the days when we were using only methenamine. Certainly at the present time with the new drugs that we have at our disposal that should be readily accomplished. When infections do not clear up rapidly, a urologic examination is essential and it ought not to be necessary to tell this to a group of urologists—they have been telling us of the necessity of this procedure. I, for one, have been preaching to my pediatric confreres the importance of a cure controlled by cultures in all cases and the necessity of a complete urologic examination when this is impossible.

DR. ALBERT E. GOLDSTEIN, Baltimore. The term "pyelitis" which Wharton, Gray and Guild use might be misleading, although it was stated that the term was employed in a general sense. If the cases are those of pyelitis with frequent attacks, the kidneys surely cannot be considered normal as the authors made mention of. This is borne out by postmortem specimens which show in these cases that there are lesions in the kidney cortex which on microscopic study show definite abnormality in the form of round cell infiltration. I can't conceive of a case of pyelitis in which there is an infection in the pelvis without an infection in the parenchyma of the kidney. That certainly can be misleading to most of us and we should be careful about it. I think the burden of proof is on the examiner when he claims that he is dealing with a case of pyelitis without having the patient examined cystoscopically and the urine obtained from the kidneys. I do not see how it is possible to state that there is a kidney infection from symptomatology alone or from the obtaining of a specimen of urine and finding pus. That doesn't seem quite reasonable, yet in all probability the symptomatology points to the kidney. The early examinations which they make note of here, while they may not have been possible certainly should not be considered pyelonephritis until urine is obtained from each kidney and pus and organisms have been demonstrated. This is important because I believe that otherwise we shall be classifying

all these cases as pyelonephritis. A better term, as Dr. Helmholtz designated, would be infection of the urinary tract. One should then determine whether one is dealing with just a cystitis or with a urethritis. Nevertheless, the work done by the authors furnishes a tremendous amount of food for thought. All these cases should have careful urologic and systematic and routine examinations when pus is found in the urine.

DR. WILLIAM E. STEVENS, San Francisco. In the presence of fever of uncertain origin in infants, pyelitis should always be suspected. Pyelitis during infancy is a self-limited disease in 50 per cent of cases. Some abnormality of the urinary tract will be found in about one third of the remainder. Pyelitis may persist indefinitely, however, with few, if any, symptoms. Other cases progress more rapidly and, if untreated, result in destruction of the kidney. I believe that pyelitis occurring during pregnancy is occasionally an exacerbation of low grade infection that has persisted since infancy. The same urologic procedures that are useful in adults, such as cystoscopy, ureteral catheterization, functional kidney tests and pyelography, should be more universally employed in the examination of the urinary tract in these patients.

DR. WILLIAM F. BRAASCH, Rochester, Minn. The paper of Dr. Wharton and his co-workers contains many data which should prove to be of great clinical value. I was especially interested in those data concerning the relation of pyelonephritis of children to chronic renal infection of the adult. It has been a moot point whether adult renal infection continued from renal infection of children or whether its origin was recent and independent. I have always believed that renal infection of children had little or no bearing on adult renal infection, and that infection which continued from childhood was due to some abnormality such as Drs. Wharton, Gray and Guild have mentioned. It is of interest that they so frequently find renal infection persisting from childhood to adult years without the presence of any abnormality. Although the comparative incidence of infection which continues from childhood probably is small, it is evident that it can occur. Dr. Wharton and his co-authors called attention to the fact that children with repeatedly recurring attacks of pyelonephritis were particularly likely to have the infection continue into later years. It is my impression that these recurring attacks represent acute exacerbations of continued chronic pyelonephritis rather than separate episodes. It would seem probable that recent methods of chemotherapy will eliminate many infections of children and will reduce to some extent the incidence of pyelonephritis of adults. I also want to refer briefly to the interesting observations made by Dr. Hepler. About twenty-two years ago I first read a paper on atonic or inflammatory dilatation of the renal pelvis and ureter before this section in Atlantic City. I described the pathology and urographic diagnosis of this condition and showed how atonic or adynamic pyelo-ureterectasis differed from the dynamic form. It would seem that an embryonic etiology is present in but few cases of adynamic ureterectasis. It is usually not difficult to distinguish between the microscopic pathologic changes of the two conditions. Adynamic ureterectasis usually results from infectious changes, leaving a thickened ureteral wall with much cicatricial tissue. With dynamic ureterectasis, on the other hand, the wall is thinned and contains but few cicatricial cells. It should be remembered that both dynamic and adynamic ureterectasis may be present and it may then be very difficult to identify the predominant factor. Trautner's contributions to the physiologic distinction between the two conditions are particularly significant. It is difficult to explain how ureterectasis follows inflammation. Possibly it is caused by disturbance of innervation of periureteral origin; however, ureteroscopy will demonstrate but little reduction in ureteral peristalsis.

DR. ALEXANDER B. HEPLER, Seattle. Considering the uncertainties which surround this subject, the criticisms have been very generous. This is still a controversial subject. This condition has not been established as a definite entity. I simply wanted to add some clinical observations on these nonobstructive dilatations in the hope that by the discussion stimulating interest we could come to a nearer solution of the mechanism that is behind it.

FRACTURE OF THE SKULL INVOLVING
THE PARANASAL SINUSES
AND MASTOIDS

C C COLEMAN, M D

RICHMOND, VA

Fracture of the skull involving the paranasal sinuses and mastoids is important mainly because it exposes the brain to infection. Less serious effects are paralysis of cranial nerves and facial deformity from displacement or loss of bone fragments.

Fractures of the skull, whether of the vault or base or, as they usually are, of the two in combination, frequently produce serious damage to the brain, and the brain injury should receive primary consideration. Fracture of a paranasal sinus is often only a minor effect of an injury which damages important regions of the brain at the base of the skull and severely macerates the cerebral cortex by the indriven fragments of an associated compound fracture of the vault. Consideration of the sinus fracture in serious cases of head trauma must at times be postponed or even entirely abandoned in favor of a management which gives the patient the best chance to withstand the primary effects of his injury.

The two main objectives of surgical treatment of head trauma are the prevention of infection and the removal of intracranial hematomas. Open wounds of the vault of the skull, while often inadequately treated, should present few problems of management to surgeons familiar with such injuries. The situation created by compound fractures of the base of the skull, because of their extent and frequent inaccessibility and their common association with severe fractures of the vault, is often a most complex one, totally unfavorable to effective surgery.

The limitations of the x-ray examination in the demonstration of fracture lines at the base of the skull are well known, and the diagnosis must generally depend on such effects of the fracture as bleeding from the cranial orifices, cerebrospinal fluid leaks, suggestive ecchymoses and palsy of the cranial nerves.

The situation is better with respect to the sinuses accessible to surgical exploration, such as the frontal and the anterior ethmoid, but even with fractures of these sinuses one cannot often be sure that operation is required to close a dural laceration for the prevention of meningitis. If operation is done, other dural lacerations in the remote ramifications of the fracture line, even more important than the sutured laceration, may be entirely unsuspected.

The uncertainties as to the location and extent of a fracture of the base involving the sinuses, and the difficulty in the majority of cases of determining the presence of dural lacerations, tend naturally to the promotion of conservatism in the management of these injuries. Unless there is good reason to believe that an accessible dural laceration exists, with communication between the bony sinuses and meningeal spaces, operation is not advisable.

The dangers of fracture of the paranasal sinuses depend almost entirely on the laceration of its dural covering, and the only positive sign of such laceration is a cerebrospinal fluid leak or pneumocephalus. Cere-

brospinal fluid leaks may result from fracture of any of the cranial sinuses. When the fluid is escaping from the nose or mouth the dural fistula may be in either the anterior or the middle fossa. A dural tear in the middle or posterior fossa may permit the discharge of cerebrospinal fluid from the ear. Fluid discharged from the nose or mouth escapes more often through the cribriform plate than from either the frontal or the sphenoid sinus, although the sphenoid is believed by Rawlings to be involved in from 40 to 50 per cent of all basal fractures.

Local applications to the nasal passages, packing and intranasal douches used in an effort to prevent infection in cases of fracture of the base are not only futile but harmful. If the dural laceration can be closed, meningitis may be prevented, otherwise the development of meningitis will depend almost entirely on whether the fractured sinus through which the fluid is escaping is infected.

Compound, depressed fractures of the frontal region frequently involve the frontal sinus, with extension of the fracture line into the floor of the anterior fossa and through the ethmoids. Patients with fractures of this type, notwithstanding the severe laceration of the frontal lobe, are often free from shock, and early operation for the prevention of infection should be done. Fragmentation of the walls of the sinus is not uncommon in this type of injury, and the dura may be extensively lacerated. In the operation for such a wound it is of the greatest importance that a secure closure of the dura and scalp be made to prevent infection or herniation of the brain through the orbit. The debridement of the wound should include removal of fragments of bone from the wall of the sinus and generally the removal of its mucous lining. Drainage of the sinus may be used, but the drainage material should not be placed in contact with the sutured dural laceration. The prognosis of these severe injuries is excellent, provided all contaminated tissue, including pulped brain, is removed and the dura securely closed.

Depressed fracture of the outer wall of the sinus is not infrequent. This fracture, while often compound both externally and internally, is sometimes unique in being confined to the sinus and often requires no treatment other than disinfection, excision and suture of the cutaneous laceration. If the outer wall is deeply depressed, operation is required to elevate the bone and to permit a thorough inspection of the sinus. Depression of the supra-orbital region, if of concern to the patient, may be leveled later with rib cartilage.

The frontal sinus may be involved in linear fractures which radiate from the vault, and in these cases there is much difference of opinion as to treatment. The majority of such fractures pass through the walls of the frontal sinus to the floor of the anterior fossa and may or may not lacerate the dura covering its inner wall. I know of no way to determine whether the dura is lacerated except by inspection. The presence of bloody spinal fluid means only that there has been subarachnoid hemorrhage, but the source of subarachnoid bleeding as determined by lumbar puncture is nearly always a matter of conjecture in cases of head injuries. Even if the dura is lacerated by a linear fracture of the inner sinus wall, and this is infrequent and generally a matter of considerable doubt before operation, meningitis seems unlikely unless the sinus is infected or a hematoma of the sinus develops. I have treated such cases conservatively if there was no evidence of infection in the sinus.

or indications definitely pointing to a hematoma or a leak through the sinus with or without adjacent pneumocephalus. A conservative attitude toward this type of fracture seems to be justified by my own experience.

In a series of 940 cases of head trauma observed at the Neurosurgical Service, Hospital Division, Medical College of Virginia, in 1935-1936, there were 216 fractures of the skull, with eighty-seven fractures of the base. Of the eighty-seven basal fractures, fifteen involved the frontal sinuses, six of these were associated with severe compound, depressed fracture of the frontal vault and operation was promptly done for disinfection, debridement and closure of the dura. One patient with a slightly depressed compound fracture of the outer wall of the frontal sinus was treated by debridement and suture of the laceration overlying the fracture. Prompt recovery followed in this group. There were seven patients with linear fracture of the frontal sinus, and all recovered promptly without operation. One patient with a linear fracture of the frontal sinus died of meningitis eleven days after admission. In addition to the fracture of the right frontal sinus, autopsy disclosed comminution of the ethmoids, with extension of the fracture through the petrous portion of the temporal bone on the right side. Extensive laceration of the brain was present, and fractures of both arms, thigh, ribs and a chest injury indicated the body-wide violence of the trauma. Because of the patient's serious condition no attempt at x-ray diagnosis was made. This case illustrates well the difficult situation not infrequently found in dealing with fracture of the skull involving the paranasal sinuses.

I have exposed the anterior ethmoids a few times to close a laceration in the dura when there was a persistent cerebrospinal fluid leak. In one case this was done for the cure of pneumocephalus of the left frontal lobe. It may be done through a small frontal flap, with elevation of the dura from the floor of the fossa, access thus being given both to the inner wall of the frontal sinus and to the ethmoid on the side of the operation. It is only in the exceptional case that operation to close a cerebrospinal fluid leak presumably from a fracture of the ethmoid is advisable, but the operation may be entirely successful and should be undertaken if the leak persists for three or more days after injury, provided the patient's condition permits.

The dangers of coughing, sneezing and straining when there is a basal fracture have been frequently emphasized. Vomiting and respiratory difficulties of the unconscious patient also increase the risk of intracranial infection in the early stages of the injury, and meningitis often develops in the first few days.

Pneumocephalus is a rare complication of head trauma. Although we have employed x-ray examination almost as a matter of routine in the study of head injuries, the condition has been discovered in only four cases. In two of these cases the air was in the subarachnoid space, and in one patient there was a small amount in a lateral ventricle. Both patients had free bleeding from the nostrils, and on the day of admission subarachnoid air was demonstrated by x-ray examination. One patient died on the third day, of pneumococcal meningitis. The other made a prompt recovery without operation. In both cases the air was believed to have entered through a fracture of the cribriform plate, as is usually the case when air has a subarachnoid distribution. Two other patients had large pockets of

air in the frontal lobe, one on the left and the other on the right. Pneumocephalus had been recognized by x-ray examination in both these patients before admission. Neither had a cerebrospinal fluid leak while under observation, but one had a history of rhinorrhea for some days after a severe compound, depressed left frontal fracture about six weeks before. This fracture had involved the left frontal sinus and ethmoid, and among other things had paralyzed the left third nerve, and there seemed to be some involvement of the right third nerve. At no time was there a sudden escape of fluid from the nose on sneezing. There was no indication of increased pressure. Operation was undertaken to elevate a depressed fracture of the vault and to eradicate the large pocket of air in the frontal lobe with a stalk leading to the ethmoid region. The anterior ethmoid region was exposed extradurally through the bony defect made by removal of the depressed bone fragments, and the air cyst was incised. Its communication with the ethmoid sinus was plainly shown. A dural tube, caught in the crevice of the fracture through which the air entered the frontal lobe, was released and obliterated by suture. There was no connection of the pneumocephalus with the frontal sinus. Prompt recovery followed the operation. In a second case a large air pocket was present in the right frontal lobe. Intracranial pressure was normal. Through a frontal burr opening the air was displaced by Ringer's solution, which was allowed to flow into the pocket by gravity while a second needle provided for the escape of air from the pocket. Roentgenograms seven months later showed no reaccumulation of air. There was no fracture of the frontal sinus demonstrable in this case and no history of a cerebrospinal fluid leak.

In cases of acute head injury, the discovery of intradural air should lead to repeated x-ray examinations to determine whether the amount of air is increasing or diminishing. If it is increasing or is stationary for three or four days and cerebrospinal fluid is escaping, surgical intervention for closure of the dural laceration is indicated. In cases of large air pockets under tension and associated with a leak of fluid, operation is strongly indicated to close the fistula. If a leak is not present even intermittently, and the intracranial tension is not raised, the air may be released by puncture of the air cyst and the cavity filled with Ringer's solution.

Fractures of the mastoid and petrous portion of the temporal bone are recognized usually by such indirect evidence as bleeding from the ear in the absence of injury to the external canal, escape of cerebrospinal fluid, Battle's sign and involvement of the seventh and eighth nerves.

Hemorrhage from the ear is rarely profuse, and no treatment is required except cleansing of the external canal and auricle with alcohol and covering of the ear with a sterile dressing. There is not infrequently a collection of blood in the middle ear, and this may become infected, giving rise to otitis media and mastoiditis. In the presence of a compound fracture through the petrous portion of the temporal bone, the development of otitis media or mastoiditis places the patient in great danger from intracranial infection. To lessen the danger from retained hemorrhage of the middle ear when the drum membrane is unruptured early paracentesis should be done, and this is urgently required if the tympanic membrane shows evidence of increased intra-aural tension. Early surgical treatment of mastoiditis secondary to fracture is of the greatest importance. It is obvious that the welfare of the patient

with fracture of the mastoid or petrous portion of the temporal bone is best protected when there is close cooperation between the otologist and the neurologic surgeon. These injuries frequently come within the domain of both specialists, and treatment without appreciation of this fact is not conducive to the best results.

In forty-nine of the eighty-seven cases of fracture of the base of the skull there was free bleeding from one or both ears. Four patients died as a result of intracranial infection, giving a mortality rate of 8.16 per cent.

Compound, depressed fracture of the mastoid with laceration of the lateral sinus in one case (not in this series) caused a hemorrhage from the ear which nearly exsanguinated the patient. Arrest of the hemorrhage was accomplished by exposure of the lateral sinus and occlusion of the tear with a large muscle graft. In two cases, disabling Meniere's syndrome followed fracture of the petrous portion of the temporal bone. The two patients had deafness, a leak of cerebrospinal fluid after injury and temporary facial paralysis. Intracranial section of the auditory nerve completely relieved one patient, while the other did not improve but refused operation.

The main purpose of this discussion is to emphasize the dangers arising from infection in fracture of the base of the skull. Only a brief reference may be made to injuries of the cranial nerve which may result from these fractures. The first eight cranial nerves are liable to injury from fractures which traverse the paranasal sinuses or mastoid. Blindness of one eye, extra-ocular palsy and anosmia are not rare with fractures of the anterior fossa. Unilateral blindness and deafness are usually permanent. Oculomotor involvement with dilatation of the pupil, due to fracture, comes on immediately, while later dilatation of one pupil indicates a homolateral clot. Facial paralysis following fracture of the skull is rarely permanent. It usually appears a few days after injury. Inflammation is probably the chief cause of this paralysis. Permanent paralysis of the nerve requires anastomosis with another healthy motor cranial nerve.

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ABSTRACT OF DISCUSSION

DR FRANCIS C GRANT, Philadelphia. There is no question about the method of handling a cerebrospinal fluid leak from the ear. I leave all those cases alone. The external canal is kept sterile. The patient is turned with that ear down to encourage drainage. No lumbar punctures are done, and nothing is done to interfere with the escape of the fluid. My experience has been that the fluid leak will disappear spontaneously at the end of four or five days. I looked up statistics on the escape of cerebrospinal fluid from the ear in the last two years. There have been sixty-three cases, with one patient dying from a meningitis. The others recovered. My impression is that a cerebrospinal fluid leak from the ear properly treated, gives the patient a good prognosis because decompression had been done at the time of his injury. The escape of cerebrospinal fluid from the nose is an entirely different problem. I agree with Dr Coleman that when one knows exactly the situation of the leak, as is not uncommonly the case in a badly compounded fracture with a tear in the dura every effort should be made to close that defect leaving a water tight dura. The difficult cases to handle are those of a rhinorrhea with no definite evidence as to whether the fluid is coming through the cribriform plate or one of the sinuses. I do not believe that operation should be done unless one is absolutely certain of the point at which the dura has been torn. My experience in the last six cases of compound frontal fractures with leakage of cerebrospinal fluid from the nose has been four recoveries following operation. I have had five

patients without a demonstrable fracture line and two of those have died from meningitis without operation. I did not feel in any of these five cases that operative intervention was justified, because I did not know the point at which the dura had been torn. A transfrontal craniotomy is a major operative procedure requiring special instruments and technic. Furthermore, unfortunately, the dura in the frontal area is thin and difficult to suture. If thin dura is encountered that tears when one attempts to suture it, the proper procedure is to place a pad of muscle over the area and sew the dura together over the muscle. Then carry a drain through the operative field, attempting to sidetrack the cerebrospinal fluid leak from the potentially infected sinus out through the presumably sterile operative field.

DR WELLS P EAGLETON, Newark, N J. Any fracture which passes through the sinuses is a dangerous fracture if the dura is torn, because a fracture which extends from a frontal sinus through the dura and into the brain has a direct communication with the outer world. It is in reality a compound fracture. A fracture through a nasal sinus with a tear in the dura may not only cause meningitis promptly but a 'late meningitis', because, in its effort to repair, the mucous membrane of the sinus grows rapidly into the defect and may continue its growth wherever there is damaged cerebral tissue, causing a large cyst connected with the frontal sinus. Later, if the mucous membrane of the nose becomes infected by a cold, bacteria may pass from the nose through the crack and the dura into the arachnoid by direct continuity of tissue infection. In the *Journal of Laryngology and Otology* (November 1929) I described three such cases. All terminated in a late meningitis. As a result of these experiences, I now put a layer of skin or fascia lata tucking it in and thus short-circuit the nose from the pia-arachnoid by walling off the sinus, so as to prevent later infections. If the tear is small, I take a piece of mucous membrane from the mouth and place it over the defect with the freshly cut surface applied against the dura. Fractures through the temporal region cause meningitis in only 8 per cent of the cases. I have a definite rule about such cases. I keep the patients in bed and watch them carefully. If the temperature rises, associated with headache, or if there is a rise in temperature which cannot be accounted for and the cell count in the lumbar fluid is increased, I operate and follow the fracture wherever it leads. I have cured one case of meningitis in which the fracture went directly across through both petrous apices.

DR CLAUDE C COLEMAN, Richmond, Va. Dr Grant has referred to the posture of the patient with leakage of cerebrospinal fluid from the ear. It has been rather difficult for me to determine just what is the best position for these patients, that is, whether the leaking ear should be down or up. If the escape of cerebrospinal fluid is encouraged by placing the leaking ear down, fluctuation in intracranial pressure by loss of fluid might tend to promote infection by aspiration from the ear into the meningeal spaces. I have treated these patients in both ways but have preferred to place the patient in bed with the leaking ear uppermost. Dr Grant has emphasized the difficulty in determining when a dural laceration should be closed. If one knows that the laceration is accessible, certainly it would be good surgery to attempt closure, provided the patient's condition will permit such a procedure. A fracture may start in the frontal region, extend through the cribriform plate and involve the petrous portion of the temporal bone. In such a fracture it would be difficult if not impossible to determine the location of the dural laceration responsible for the leak. One is sometimes able to be reasonably sure of the location of the dural laceration responsible for the leak, and if such laceration is accessible it should be sutured or repaired with fascia. The presence of blood in the cerebrospinal fluid associated with a fracture of the posterior wall of the frontal sinus, is considered by Dr Eagleton to be an indication of a laceration of the dura adjacent to the fracture. Subarachnoid bleeding is frequently caused by head injury and even when the patient has a fracture of the frontal sinus the subarachnoid hemorrhage as determined by spinal puncture might easily come from some part of the subarachnoid space remote from the fracture. Mastoiditis and aural infections following fracture of the petrous portion of the temporal bone are problems

for the otologist. Such cases in my clinic are treated by the otologist. The importance of early operation on mastoid infection secondary to fracture of the petrous portion of the temporal bone should be emphasized. It would seem that these cases would be especially liable to intracranial infection if not promptly treated.

BREECH DELIVERY

A COMPARATIVE STUDY OF LOCAL AND GENERAL ANESTHESIA

MAGNUS P. URNES, M.D.
AND
HARRIS J. TIMERMAN, M.D.
CHICAGO

Breech presentation is always of interest because of the difficulties and complications so often encountered. The problem of a suitable anesthetic is a pertinent one. It is the purpose of this paper to present the results of a large series of breech deliveries in the home and the technic employed, with special reference to the use of local anesthesia. During the four year period July 1, 1932, to June 30, 1936, 11,772 patients were delivered at the Chicago Maternity Center. Three hundred and forty-six breech presentations occurred in 336 cases, an incidence of 2.8 per cent. Seventy patients were primiparas and 266 multiparas.

TABLE 1—Eighty-Six Operative Deliveries 24.9 Per Cent of 336 Cases

Operations	No.	Para sacral	Puden dal	Ether	Mixed	None
Breech extraction	16	7	2	4	1	2
Breech extraction with forceps to aftercoming head	25	11	3	6	5	0
Spontaneous delivery with for- ceps to aftercoming head	40	3	2	9	3	0
Breech extraction with cran- iotomy	3	2	0	1	0	0
Cesarean section	2	0	0	1	0	0
Totals	86	23	30	21	9	2

The Chicago Maternity Center is a large outpatient obstetric service. All patients are delivered in the home except those with antepartum bleeding or severe toxemia and those for whom cesarean section is advised. Only two patients were hospitalized primarily because of breech presentation. Both had markedly contracted pelvis and both were delivered by cesarean section. An intern, a nurse and one or more students conduct the labor and delivery in the normal cases. The resident sees all patients when breech presentation is diagnosed, and either he or one of the attending staff conducts the delivery. At times, however, the intern must conduct the delivery alone, either because of his failure to make the diagnosis or because of a very rapid labor. Several babies probably were lost that might have been saved had the resident, with adequate equipment, been present. When the time for delivery is imminent the patient is placed on a table and everything prepared for immediate intervention should that become necessary. Her legs are supported by students or members of the family. The sterile instruments in pans and basins of solutions are placed on a board supported between two chairs on the operator's right. The intern acts as the assistant and another intern as the anesthetist if ether is to be used. It is our policy to allow the patients to deliver spontaneously unless a

definite indication arises for intervention, with the exception that an episiotomy and a prophylactic application of forceps to the aftercoming head are done on most primiparas. In our opinion an episiotomy is indicated for primiparas and forceps to the aftercoming head saves much delay and decreases the incidence of birth injuries from the strong traction on the neck so often necessary. The De Lee modification of the Simpson forceps is used. In these cases and in cases of multiparas in which assistance seems likely, a pudendal block anesthesia is induced as soon as the breech is distending the perineum. The breech is allowed to be born spontaneously, and manual aid is given to the shoulders, if necessary. The head is brought into the pelvis by combined pressure from above with the outside hand and traction below with a finger in the baby's mouth and is then delivered by forceps.

Local anesthesia, although not new in obstetrics, apparently has been used little for breech delivery. King¹ in 1916 and Torlund² in 1930 described a method of perineal block and recommended its use for normal deliveries and repairs. The original technic for pudendal block was described by Laven. Our method differs somewhat from the others but accomplishes the same result. We have found it particularly adaptable for breech deliveries. The patient is awake and able to cooperate to deliver her baby spontaneously. The uterine contractions are not affected. The relaxation of the pelvic floor and perineum obtained is comparable only to that with surgical ether anesthesia, and the excruciating pain attendant on the distention of the pelvic floor and perineum is completely obliterated. Episiotomy and forceps to the aftercoming head (except high forceps) can be performed easily with little discomfort to the patient. The duration of the anesthesia is about one hour and a half.

TECHNIC OF PUDENDAL BLOCK

With the patient in an exaggerated lithotomy position, intradermal wheals are made bilaterally half way between the rectum and the tuberosity of the ischium. One per cent procaine hydrochloride with 2 minims (0.12 cc.) of epinephrine (1:1,000) per ounce (30 cc.) is used. The index finger of the left hand inserted into the rectum palpates the left ischial spine. A 10 cm. needle is passed horizontally through the cutaneous wheal directly to the spine and then allowed to slip just under and beyond it. Because of the direction of the needle and the guiding finger in the rectum there is no danger of piercing the rectum. From 10 to 15 cc. of solution is deposited at this point, blocking the internal pudic nerve as it passes dorsal to the spine of the ischium just before entering Alcock's canal. The needle is then withdrawn until it lies just beneath the skin. The direction is changed laterally toward the tuberosity of the ischium, and the needle is inserted until the point strikes the bone. Five cc. is injected while the needle is gradually being withdrawn. This anesthetizes the large perineal branch of the posterior cutaneous femoris. Again the needle is withdrawn until it lies just under the skin, and its direction is changed vertically upward. While it is advancing, 5 cc. is deposited in the subcutaneous tissue of the labium majus, blocking off the perineal fibers of the ilio-inguinal nerve. The procedure is repeated on the opposite side, the operator using the same finger in the rectum or changing to the index finger of the right hand. The vaginal mucosa and the skin of the perineal area as high as the clitoris

From the Service of the Chicago Maternity Center.
Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

1 King, R. Surg. Gynec. & Obst. 23: 615-617 (Nov.) 1916.
2 Torlund, Torleif. Northwest Med. 20: 312-314 (July) 1930.

become anesthetized within five minutes. Relaxation of the levator ani and the perineal muscles is usually complete.

An analysis of this series of 346 deliveries reveals that four-sixty, or 24.9 per cent, were terminated by operative intervention. Two hundred and sixty patients delivered spontaneously. Table 1 lists the operations and the anesthetic agent under which they were performed. Pudendal block was used successfully for episiotomy and forceps to the aftercoming head twenty-eight times. In three instances it was necessary to supplement the local anesthesia with a small amount of ether.

Should an indication arise necessitating breech extraction, parasacral block anesthesia is induced. Five extractions were done with the patient under pudendal block with one fetal death, but this method is not recommended because little or no relaxation of the uterus is obtained. During 1932 and part of 1933, before parasacral anesthesia was used to any extent, drop ether was the anesthetic of choice for this type of delivery.

The technic of parasacral block has been described in detail by Tucker and Benaron.³ The anterior sacral nerves are blocked as they leave the anterior sacral foramina. The uterine contractions are obliterated, and sufficient relaxation of the uterus is obtained for the extraction to be performed. As with pudendal block, the pelvic floor and perineum are relaxed and complete cutaneous anesthesia results in practically all cases. Twenty breech extractions were performed by this method, with two fetal deaths in eighteen viable cases, a fetal mortality of 11 per cent.

Contraindications to the use of local anesthesia for extractions, or even for the simpler operations, are threatened rupture of the uterus, severe fetal asphyxia and inflammatory lesions of the perineum. In the cases presenting one of these objections and in the early cases previously mentioned, ether was used. In six cases the parasacral block was supplemented by ether anesthesia because in the operator's judgment not enough relaxa-

MATERNAL COMPLICATIONS

The more common maternal complications of delivery encountered are listed in table 2. Postpartum hemorrhage was the most frequent and the most serious. It occurred twenty-eight times in the entire series of 336 patients, an incidence of 8.4 per cent. The average loss of blood was 830 cc. in the cases of hemorrhage. Seventeen of the twenty-eight deliveries had terminated spontaneously. Eight cases of hemorrhage occurred after breech extraction, of which four were in the

TABLE 3—Fetal Deaths (Corrected), Twenty-Three, 66 per Cent

Cause of Death	No.	Procedure		Anesthesia	
		Spontaneous	Extraction	Spontaneous	Extraction
Asphyxia from dystocia with aftercoming head	7	5	2	None	Ether
Asphyxia from shoulder dystocia	2	1	1	None	Parasacral
Cerebral injury	3	2	1	None	Ether
Prolapsed cord	2				
Pneumonia	2				
Undetermined	7	3	4	None	{ Ether 2 Parasacral 1 Pudendal 1

parasacral series and four in the ether series. In the forty spontaneous deliveries with forceps to the aftercoming head there was one hemorrhage when pudendal block was used and two when ether was the anesthetic. There were, however, twenty-five cases of pudendal block and only twelve of ether anesthesia in this series.

Manual removal of the placenta was performed thirteen times, an incidence of 3.8 per cent. Six of these cases were in the spontaneous group and seven in the operative group. Four of the extractions under ether required this intervention while only two of those under parasacral anesthesia needed it. The remaining case occurred in a forceps delivery with ether anesthesia. There was one ruptured uterus, following a difficult extraction with high forceps to the aftercoming head, with the patient under ether anesthesia. The patient, a multipara, had been in labor many hours under the care of a midwife, who had made several unsuccessful attempts at extraction. When the operative personnel of the Maternity Center was called the mother was exhausted and the fetus in poor condition. When a massive hemorrhage immediately followed the delivery, a ruptured lower uterine segment was discovered on intra-uterine exploration. Manual removal of the placenta was followed by insertion of a uterine pack and the patient was hospitalized. A supracervical hysterectomy was performed. Both mother and baby made an uneventful recovery.

MATERNAL MORTALITY AND MORBIDITY

There was one maternal death in this series, a mortality of 0.3 per cent. A brief summary of this case is given.

A Mexican septigravida aged 38, had antepartum care at the Chicago Maternity Center and on May 8, 1934, was delivered spontaneously without anesthesia of a 1,400 Gm. stillborn fetus. At the time of delivery her temperature was 100.2 F. and there were pulmonary symptoms. She was hospitalized on her second postpartum day with a diagnosis of pulmonary tuberculosis. Death followed on the twelfth postpartum day. Autopsy revealed the cause of death to be milary tuberculosis.

It is difficult to evaluate with any degree of accuracy the morbidity in a home series such as this because the

TABLE 2—Complications Encountered at Delivery

Complication	No.	Spontaneous		Spontaneous with Forceps		Extraction	
		No Anesthesia	Pudendal	Ether	Parasacral	Ether	
		Cases	Cases	Cases	Cases	Cases	
Postpartum hemorrhage	28	17 6.6%	1 4.0%	12 16.6%	20 20.0%	4 23.0%	
Manual removal of placenta	13	6 2.3%	0	1 8.3%	2 10.0%	4 23.0%	
Ruptured uterus	1	0	0	0	0	1	
Cervical laceration	2	1	1	0	0	0	

tion of the uterus was obtained for him to proceed with safety. These are the cases classified as mixed in table 1. In the seventeen cases of extraction performed with ether or mixed ether and local anesthesia there were four fetal deaths, a fetal mortality of 25 per cent. The total mortality for the forty-four breech extractions was 17 per cent. This figure compares favorably with recent reports of large series of breech extractions reported by Gordon and Garlick⁴ from Brooklyn and by Cannel and Dodek⁵ from Cleveland.

3 Tucker, Beatrice E. and Benaron, Harry B. W. Am. J. Obst. & Gynec. 27: 850-863 (June) 1934.
4 Gordon, Charles A. and Garlick, Ralph and Oginsz, Philip. Am. J. Obst. & Gynec. 28: 140-150 (July) 1934.
5 Cannel, Douglas E. and Dodek, Samuel M. Am. J. Obst. & Gynec. 27: 517-528 (April) 1934.

temperature is taken only once a day. We felt, therefore, that morbidity statistics for this series would be of little value, and so they were omitted.

FETAL MORTALITY

Of the 346 babies born, sixty-five were stillborn or died during the first two weeks of life, a gross mortality of 19 per cent. Of this number twelve were nonviable (under 1,500 Gm.), eleven monsters and nineteen macerated. Deducting these cases, twenty-three babies were lost, giving a corrected fetal mortality of 6.6 per cent.

Table 3 lists these fetal deaths under the various forms of delivery and anesthesia and their cause as determined at the time of delivery or at autopsy. Dystocia with the aftercoming head was the most frequent complication and occurred seven times, five of the seven in spontaneous deliveries. In each instance the labor was rapid and the intern had to conduct the delivery without assistance from the resident staff. Shoulder dystocia was the cause of stillbirth in two cases, one in a spontaneous delivery and the other in a breech extraction with parasacral anesthesia. In the latter case the fetus weighed 10¾ pounds (4,876 Gm.). Autopsy revealed cerebral injury as the cause of death in three fetuses in which no dystocia was recorded. Prolapsed cord accounted for two deaths. Two neonatal deaths resulted from pneumonia. There were seven deaths of undetermined origin.

CONCLUSIONS

1 The fetal mortality of this series of breech deliveries in homes compares favorably with that in reports of recent hospital series.

2 Parasacral anesthesia for breech extractions in our opinion is preferable to ether anesthesia, since in this series the fetal mortality was slightly lower and the incidence of maternal complications definitely lower when it was used. It possesses the added advantage that its use does not require the presence of a skilled anesthetist in addition to the operator, and it may be used in cases of toxemia or pulmonary complications.

3 Pudendal block anesthesia is particularly adapted to spontaneous delivery with episiotomy and forceps to the aftercoming head. It produces no relaxation of the uterus, so that the serious complications of postpartum hemorrhage and manual removal of the placenta will not occur as frequently as with the use of ether.

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ABSTRACT OF DISCUSSION

DR. JOSEPH B. DE LEE, Chicago: The importance of topical or local or regional anesthesia in breech cases is being recognized more and more. In a paper on the subject by C. McIntosh Marshall (*J. Obst. & Gynaec. Brit. Emp.*) the importance of local anesthesia was stressed and proved. It is proved again by Urnes and Timmerman. Local anesthesia is very simple and can be used by any doctor with ordinary ability. The apparatus can be sterilized in the office, and the materials for injection can be obtained in ampules so that they do not have to be prepared at the place of the operation. I might also call attention to the superiority of forceps to the aftercoming head, to replace the brutal and violent measures that heretofore have been adopted for these cases. The Mauriceau-Smellie-Veit and the Martin-Wiegand-Celsus procedures should be abolished from the treatment of breech presentation. If the head does not enter the pelvis with moderate pressure from above aided by moderate traction on the jaw from below, which traction, however, is not used to pull the baby out but is used to adjust the baby's head to the best diameter and the circumference of the pelvis, the forceps should be applied to the aftercoming head. It is not necessary to have a special forceps like Piper's.

The ordinary Simpson forceps will do just as well. I would like to make one correction in respect to the use of the term the prophylactic forceps to the aftercoming head. One tries to prevent damage to the mother and baby by the forceps operation, and therefore all forceps operations are prophylactic. However, the so-called prophylactic forceps operation is intended to be used in cases in which the head has passed the cervix and has come down to rest on the perineum, has completely rotated, and is retained by the pelvic floor. The idea of the prophylaxis in this particular instance is that it prevents damage to the baby's brain from prolonged pounding of the head on the pelvic floor and that it prevents the overstretching of the pelvic floor and the damage resulting from pounding. That is the prophylactic forceps operation.

DR. HARRIS J. TIMERMAN, Chicago: I wish to emphasize the simplicity of the local anesthesia procedures, especially the pudendal block. We found that inexperienced interns could readily be taught the procedure. I would caution that after the anesthetic has taken effect the patient loses most of her desire to bear down because of the deadening of the perineum and pelvic floor. She must be reminded frequently by the obstetrician if she is to expel her baby spontaneously. Fetal injuries were not included in the paper. There were but few. Three fractured clavicles occurred, one in a spontaneous delivery and two in breech extractions under general anesthesia. There were two fractured skulls and one of the two babies died. That baby was delivered spontaneously without anesthesia. The delivery was rapid. The autopsy revealed a fractured skull and cerebral hemorrhage. The other case was a depressed skull fracture occurring in a breech extraction under parasacral anesthesia.

FAVISM

AN UNUSUALLY OBSERVED TYPE OF HEMOLYTIC ANEMIA

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Favism is a disease characterized by a rapidly developing anemia accompanied by jaundice, hematuria and hemoglobinuria, and owes its onset to the ingestion of the bean *Vicia faba* or to the inhalation of pollen from the blossoming plant. This bean seems to be a common article of food in the southern part of Italy, Sicily and Sardinia. Reports of the disease are not uncommon in the Italian literature and there are a few references to it, as fabismus, in the German. Although the beans are eaten by Italians resident in this country there seems to be little or no reference to it in English or American literature. A single case report of McCrae and Ullery¹ in 1933 and the following personally observed instance seem the only ones described in this country.

B. B., a man, aged 21, was admitted to the hospital complaining of weakness, a yellowish tinge of the skin and abdominal distress. The illness came on suddenly at a ball game and was attributed to a heavy meal taken just previously. The patient was indefinite about the presence of fava beans in this meal but had had them several times in the past few days. The patient thought he had experienced similar distress before but could not recall the exact circumstances. He had always been strong and in good health previously. There were no food intolerances, recurrent abdominal pains or other gastro-intestinal disturbances in the past history. He had suffered for two or three years from chronic sinusitis. The family history was given as negative. The father and mother were living and well. Two sisters had died in childhood.

From the Department of Medicine of New York Post Graduate Hospital.
McCrae, Thomas and Ullery: *J. C. Favism* J. A. M. A. 101: 1389 (Oct. 28) 1933.

The patient was acutely ill. Though tanned, he showed definite icterus in the sclerae and soft palate. A postnasal discharge was present. The examination was otherwise negative except for a questionably palpable spleen. The fever was 104 F and the pulse rate 100. The urine was deep reddish brown, with a specific gravity of 1.012 and marked albuminuria, red cells were profuse, with many hyaline and granular casts. The benzidine reaction was 4+ on the urine. The Wassermann reaction was negative. The blood culture was negative. The stool showed a 4+ benzidine reaction. The hemoglobin was 32, red cells numbered 1,600,000, white cells 12,400, with polymorphonuclears 68 per cent, eosinophils 1 per cent, monocytes 2 per cent and lymphocytes 31 per cent. The smear showed anisocytosis. No malaria parasites were present. The bleeding and clotting times were normal. The icterus index was 30, the direct van den Bergh test was negative, the indirect van den Bergh 6 mg per hundred cubic centimeters. The blood showed nonprotein nitrogen 18.0 and sugar 121. The cholesterol was 202. Gastric analysis showed free hydrochloric acid present. The fragility of the erythrocytes was from 0.450 to 0.315. There was no bilirubinuria was present, 6 mg per hundred cubic centimeters. The Donath-Landsteiner reaction was negative.

A chest roentgenogram showed old puerile type tubercle foci. Gastrointestinal study showed moderate splenic enlargement, moderate antral hyperactivity and some duodenal stasis classed as functional in origin. Genito-urinary roentgenograms and cystoscopic study were negative. The gallbladder was free from disease and essentially normal to x-ray examination.

Later questioning revealed that the maternal grandmother, the mother and one of the mother's brothers had been repeatedly jaundiced at times.

The first impression was of an acute hemolytic anemia such as paroxysmal hemoglobinuria, hemolytic family icterus or chemical poisoning. There were, however, obvious contradictions to those diagnoses.

The course was as follows. For two days the complaints were of headache, weakness and unlocalized abdominal distress with general malaise. Marked anorexia was present. After that, fatigue was the only complaint. The patient was up in a chair fifteen days after admission.

The urine five days after admission showed albuminuria 1+, from 4 to 6 red cells per high power field and a few granular and hyaline casts. The benzidine reaction was still 2+. Ten days after entrance the urine was entirely normal. The hemoglobin and red cells fell to 32 per cent and 1,300,000 respectively four days after entrance. A few normoblasts and marked polychromasia were noted. After transfusion, on the eighth day in the hospital the red cells were 4,600,000, the hemoglobin being 70 per cent. A week later the hemoglobin was 80 per cent, red cells 3,900,000 and white cells 6,900. The reticulocytes were 12 per cent. After twenty-one days in the hospital the hemoglobin was 85 per cent and red cells 4,600,000, with normal smear. The fragility varied from 0.450 to 0.315 and from 0.495 to 0.315. The stools became benzidine negative after two weeks. The icterus index was 9 and the van den Bergh reactions were normal after six more days in the hospital. The blood nitrogen was normal after twelve days.

The therapy employed was a high protein diet, rest, ample dosage of ferric ammonium citrate and one transfusion of 500 cc.

The patient returned to the clinic one month after admission with the story of rapid gain in strength and no further gastrointestinal upset or abnormality of the urine. The color was good and the sclerae were clear. The hemoglobin was 95 per cent and the red cells numbered 4,600,000. The spleen was just palpable. In another week both the blood count and the patient were entirely normal and have remained so despite intercurrent infections of the upper respiratory tract, three nasal sinus operations and a mastoidectomy.

Attention to the case report of McCrae and Ullery prompted further investigation of the history with the following developments. The maternal grandmother had had several attacks of sudden weakness, pallor, jaundice and dark brown bloody urine. The acute picture lasted three or four days and was followed by

rapid recovery to the normal state. The mother had had similar attacks. The eldest brother had one attack of the same nature. The maternal great grandfather and his sister and all of her children had had attacks almost yearly in the spring during the fava season, all attacks being of a stereotyped nature. One of the maternal grandmother's children died in an attack, a neighbor having given her a few raw green fava beans to play with. These she ate and died in twenty-four hours with collapse and jaundice.

All of these familial attacks last about three or four days. There is jaundice, pallor, dark red urine and great weakness at the onset, with rapid recovery. There has been no asthma, rhinitis or urticaria of paroxysmal nature, either associated with the attacks or at other times, in members of this group. The attacks are attributed by the affected members of this group to the bean and are said to come when it is green and fresh. They are accepted as a penalty for partaking of the beans. After the beans are dry and brown they are said to produce disturbance no longer. In the Italian countryside of origin of this family group, poisoning was apparently common and was produced at times even by the "smell" of a field of growing beans.

When directly consulted, the patient's family readily agreed that the described attack in this patient was undoubtedly due to ingestion of beans.

Skin tests² performed intradermally with extracts of fava beans in amounts from 0.0001 to 0.1 mg were negative in this patient.

He has declined the suggestion of a trial ingestion of green beans at the proper season.

In the case of McCrae and Ullery, a man, aged 53, was first observed in a serious condition with pallor, jaundice, hemoglobinuria, tender liver and severe anemia. He was discharged in thirty-eight days with no jaundice and a normal urine. An extract of the fava bean in a dilution of 1:1,000 gave a positive skin test and caused malaise and backache for four days. This reaction was later duplicated. The patient had eaten a large meal of cooked fava beans five days before admission. An hour later he felt very weak and two hours later voided very black urine.

This syndrome is mentioned by ancient authors and has been reported as an idiosyncrasy since the middle of the nineteenth century. After an incubation period of from two to six hours with inhalation, and of from one to two days in ingestion cases, the symptoms begin. Occasionally they may develop much sooner. Chills, fever, vomiting, weakness, vertigo, tinnitus and loss of consciousness may occur. Marked pallor and jaundice, rapidly increasing to the third day, an enlarged and tender liver and often splenomegaly are noted. Biluria may be found and the urine constantly shows red blood cells and hemoglobin with albumin and granular casts. The hemoglobin and red cells fall rapidly, often to 20 per cent and 1,000,000 respectively. After an initial leukopenia there is a leukocytosis. The resistance of the red cells is normal and auto-agglutination is not found. Hemoglobinuria is not constant. The serum of patients is not hemolytic to their own cells or to the cells of others but the injection of such serum into rabbits produces hemoglobinuria and leukocytosis. Abortive and malignant types are observed. Death may occur from anemia (8 per cent in Sardinia). Usually in from two to four days the clinical picture improves.

The diagnosis is apparently easy in regions of common occurrence but is difficult elsewhere without the

² Performed in the Allergy Clinic through the kindness of Dr. W. C. Spain.

aid from the patient or relatives of a history of ingestion or exposure, especially in the abortive forms Malaria and paroxysmal hemoglobinuria can usually be excluded

As to therapy, epinephrine has been suggested for the early shock and transfusion of blood for the anemia. The administration of iron may expedite convalescence if the body iron reserves are depleted.

In about 20 per cent of cases a hereditary factor is present (as in allergy). In certain families every member for generations has been reported as severely affected. The individual susceptibility varies. After years of eating the beans with impunity, a severe attack may occur with subsequent freedom. The onset is usual in adult life and in old age. Ingestion by immune mothers may affect the suckling offspring. There is no sex predilection. In 1,211 cases, 38 per cent originated in inhalation from blooms and 62 per cent in the ingestion of raw or cooked beans. The prevalence of the condition apparently varies from year to year. It occurs oftenest following the first ingestion of the green bean in season, and in those who consume them infrequently.

The reaction is not due to foreign fungus contamination but to some of the substance of the bean. Animals can be sensitized by feeding or injection. Some authors hold that there is a state of hypersensitiveness to the bean protein and that the manifestations are due to an anaphylactic reaction. Only a few of those exposed to a single preparation of the bean will become ill and there is no quantitative relationship noted in its effect. Death may occur from a small quantity.

850 Park Avenue

THE EARLY DETECTION AND TREATMENT OF DEFECTIVE HEARING IN CHILDREN

HORACE NEWHART, M.D.

MINNEAPOLIS

The purpose of this paper is to stress the importance of the early discovery of deficiencies of hearing in children by accurate methods recently made available, which make possible the more effective treatment of diseases of the ear resulting in defective hearing.

Otology has kept pace with other medical specialties in productive research, pathology, diagnosis and improved technic in the surgical treatment of complications involving the middle ear. Achievement in the prevention of deafness, however, when compared with accomplishment in other fields of preventive medicine, leaves much to be desired. Both the medical profession and the public have largely failed to appreciate the importance and magnitude of the problem of conserving the hearing, on which the individual to a great extent is dependent for his normal intellectual development, for the acquisition of speech and for maintaining his economic and social security.

The magnitude of the problem is indicated by the statement that 10,000,000 persons in the United States have a demonstrable deficiency of hearing, causing a recognized or potential handicap. Of these, 3,000,000 are school children, of whom 300,000 already are handicapped in their scholastic achievement.

Since a large percentage of all cases of impaired hearing are preventable by the application of knowledge now available to every physician, it may be stated without fear of contradiction that the ear, in proportion to its importance, is the most neglected organ of the body.

The attitude of the average person toward efforts to remedy this tragic condition has been one of indifference, owing chiefly to a lack of understanding of fundamental facts involved in the problem.

The pediatrician has been a notable and consoling exception. Through his interest and success in reducing the incidence of the contagious diseases of childhood, with their many complications involving the ear, he has rendered valuable service in lessening the incidence of deficiencies of hearing in his patients. His close contact with children has caused him to realize that his opportunities and responsibilities in helping to solve the problem of better hearing are often greater than those of the otologist.

Many factors, ordinarily overlooked, have caused the failure to secure more satisfactory results in this field of preventive medicine. Among them the following should be mentioned:

- 1 The inaccessible anatomic location of the ear has been a difficult barrier to otologic research, diagnosis and effective treatment of diseases of the ear causing defective hearing.

- 2 Because of the physiologic factor of safety, whereby man has been given a materially greater hearing acuity than is required to meet his ordinary needs in civilized life, a person may lose a considerable percentage of his hearing acuity without being conscious of his loss. This fact accounts for frequent neglect of the ears until it is too late to obtain the most satisfactory results from treatment and has been the foundation for the widespread, persistent, cruel fallacy to the effect that when once the ear has begun to deteriorate treatment is not worth while. This defeatist attitude has caused much needless deafness.

- 3 A most important factor has been the inadequacy of the older methods of testing hearing acuity to disclose a slight but significant loss of hearing. The presence of such a deficiency often is not recognized by the child himself, his parents or his teachers. It has only recently been shown that slight losses of hearing in school children cause retardation, speech defects, inferiority complexes and unsocial behavior.

The older methods, the watch tick, acoumeter, whisper and conversational voice, as ordinarily applied, have been too crude, inaccurate and time consuming to meet the requirements of modern otologic practice. In their application, until lately, certain fundamental acoustic principles which must be observed in order to insure accuracy in making tests of the hearing by any method have been overlooked.

- 1 No test of the hearing can yield accurate results when made in the presence of noises of sufficient intensity to mask the tones or the sounds used for testing. Such noises are especially disturbing in tests of children. They must be suppressed as far as possible at the source of origin and excluded from and absorbed by the walls of the space in which the tests are made by adequate acoustic treatment. Such treatment can be effectively applied for practical purposes at a moderate cost. Recently planned schools and medical office buildings are now constructed to reduce the level of noise to meet this need.

2 To avoid a common source of error, each ear must be tested separately. The ear not being tested must be excluded by some effective masking method.

3 Otologic practice today requires that for the purpose of accurate diagnosis, in distinction from screening, the physician shall be able to determine the threshold of hearing at different frequencies or pitches for both air and bone conduction.

The individual merits and shortcomings of the older tests are too many for enumeration here. However, I must protest against the frequently quoted, antiquated statement that "the ordinary-sized watch should be heard by the normal ear at 4 feet." With the great variation in the loudness and the pitch of the sound produced by different watches this is obviously untrue and, to the uninformed, is seriously misleading. Every watch used for testing hearing acuity must be calibrated by determining the distance at which it can be heard by the normal ear. This distance serves as the denominator of the fraction whose numerator is the distance at which the watch is perceived, the fraction expressing the hearing acuity.

An improved substitute for the watch, recently produced by Dr. Frederick N. Sperry, consists of a standardized stop-watch movement of relatively low pitch without face or hands. Unfortunately it is too loud to disclose a slight loss when used in a small acoustically treated room. The advantages of the Sperry tester commend it for use by the physician, the school and public health nurse and the teacher for roughly detecting and estimating the degree of a loss of hearing when better means are not available.

The cochleopalpebral test to determine total absence of serviceable hearing in infants and very young children, though not infallible, should be known to every pediatrician. A normal reaction consists of the quick, reflex blinking of the eyelids in response to a suddenly made loud noise.

Accurate detection of a slight or moderate hearing deficiency in the infant or very young child is impossible. The presence of mouth breathing, pathologic cervical glands, cleft palate, frequent infections of the upper respiratory tract, failure to talk at the normal age and unresponsiveness to speech and noises should cause one to suspect defective hearing. Children over 4 years of age by training can be conditioned to respond to various tests for an approximate determination of the degree of hearing acuity they possess. In testing the hearing of young children one should never forget their inability to concentrate the attention for any sustained period. The acoumeter, the accentuated whisper and the conversational voice are all too loud for the accurate detection of slight degrees of impairment of hearing. Only the suppressed whisper, and not the "stage whisper," as erroneously stated in some textbooks, should be used for disclosing a slight loss of hearing.

Tuning forks, when properly calibrated as to their decibance, when struck with a uniform blow and when used in a place affording sufficient quiet are valuable for determining the presence, type and degree of loss of hearing when the saving of time is no object.

The one most effective measure for actual accomplishment on a large scale in the field of prevention of deafness is the regular, periodic testing of the hearing of children during the school age. Then large numbers are kept under close supervision can be accurately tested in groups by screening methods for the purpose

of detecting those having a significant defect, and are available for frequent observation. The best results from preventive and corrective treatment are possible at this age.

The early detection of deficient hearing, accurately made as a regular part of the school health program, has definite objectives.

1 To provide that the child with defective hearing shall receive whatever special educational care and adjustment his condition requires in order that he may have equal opportunity with the normally hearing child.

2 To make possible the earliest application of medical or surgical corrective treatment that may be necessary to improve or maintain his hearing acuity.

3 To safeguard him against the possible burden of a severely handicapping loss of hearing in later life from causes which, on the basis of extensive clinical observation, now are known in many cases to have their origin in pathologic conditions present in childhood, such as inflammatory disease of the nasopharynx, tubotympanitis, pathologic adenoids, tonsils and nasal sinuses and many other diseases.

Audiometers of different types afford the most accurate and practical means of detecting and measuring impairment of hearing. The 4-A audiometer, in its improved form known as the 4-B, or phonograph audiometer, is used for screening purposes. With it, a maximum number of forty pupils who are old enough to write dictation are simultaneously tested. By this means three or four times as many pupils are discovered to have loss of hearing as were revealed by the older methods.

Younger pupils and preschool candidates for the Summer Roundup sponsored by the National Congress of Parent-Teacher groups can be individually tested by a modified application of the phonograph audiometer. In New York State since 1928, on the recommendation of Emily A. Pratt, M.D., of the New York State Education Department, the 4-A audiometer has been used for testing younger pupils individually. Miss Olive Burdge of Cincinnati, principal of the Oral School for the Deaf, successfully uses the phonograph audiometer for testing young children in groups by a method called the Cincinnati telephone game, in which the children whisper to assistants the numbers they hear. Preschool children and children in the lower grades can also be individually checked by the 2-A or the 6-A audiometer or any one of several other pure tone audiometers, used for diagnostic purposes, recently made available at a cost less than that of the original 2-A instrument.

The regular, periodic testing of all school children by scientifically accurate methods was endorsed first by a resolution of the House of Delegates of the American Medical Association in 1926 and later by many other national and state medical organizations.

The federal government two years ago gave its unqualified approval by helping to underwrite WPA project 188-1177, providing for a comprehensive survey including the medical and statistical follow-up of 1,000,000 children in public and parochial schools in New York City. In 1936 the New York legislature passed a law making mandatory the audiometric testing of all school children. In the same year a bill was passed requiring that all school children in the state of New York having a loss of hearing be reported by the attending physician, nurse or other person responsible through the local health officer, to the state health

department. In 1937 a law was passed in New York creating a temporary commission to study hearing conditions among preschool and school children.

During the present year legislation for the prevention of deafness and for the better care of the deaf and hard of hearing was considered or passed in several states, including California, Iowa, Minnesota, New Jersey, Oklahoma and Pennsylvania.¹ This successful and attempted legislation is a fine evidence of a rapidly growing interest in the problem of better hearing.

Audiometer tests during the past ten years, as a part of the school health program have been carried out in many widely separated communities in the United States with very satisfactory results. A striking result of the consistent use of the audiometer over a ten year period in the Minneapolis public schools is the notable reduction in the incidence of significant loss of hearing in the school population from 8 per cent to 5.3 per cent.

In the adjacent rural districts, the same screening methods being used, in a survey made as a University of Minnesota WPA project, the incidence of significant loss of hearing was found to be 13.6 per cent. Using the older methods, Minnesota public health nurses found a corresponding loss of only 2.2 per cent in rural school children. These figures indicate the urgent need of a better school health program in rural areas. This can be provided in many country districts only through the help of federal or state aid.

The educational care of the child having a deficiency in hearing calls for the understanding guidance of the teacher, the assignment of a classroom seat most favorable for hearing and speech-reading and, if the loss is greater than 20 decibels in the better ear, for special instruction in lip reading and speech correction, if needed. A last step for the severely deafened child is enrolment in a special class for the hard of hearing in a residential or day school, to be continued only for such a period as will give sufficient skill in lip reading and voice training to enable the child to continue his schooling with normal children. To educate a hard of hearing child with deaf children is a grave pedagogic error.

The use of modern individual and group hearing devices is of great help to the child having a loss of hearing of 40 decibels or more in the better ear if, on thorough trial, it materially increases his ability to interpret articulate speech. All children of kindergarten age or older having a defect which can be materially compensated by a hearing device should be given the benefit of such an aid. The use of a hearing device by the child with a handicapping loss of hearing will in the near future probably be as common as is the use of corrective glasses by the child with a visual defect causing an equal handicap.

The depression and the high cost of the needed equipment have definitely delayed the more general adoption of the audiometer in school health work. Recently the price of audiometers was materially reduced. Experience has shown that the cost of regularly testing the school population with the audiometer is more than compensated by the saving effected through reducing the number of repeaters due to defective hearing. It has been estimated that a program including the early discovery and the medical

corrective treatment of defective hearing, instruction in lip reading, the use of electrical hearing aids and favorable seating for the hard of hearing pupils will reduce by 50 per cent the amount of retardation. This would result in a saving of at least \$3,600 per thousand pupils.

The medical treatment of children with defective hearing begins with notification of the parents of the discovery of the loss of hearing and the recommendation that the child be given a thorough medical and otorhinologic examination by the most skilful physician available. The medical care of the indigent should be the responsibility of the local members of the medical profession. While it is eminently in order that the screening tests be made by the school nurse, teacher or technician, this work should be supervised by qualified physicians. The medical care of children having defective hearing consists of the application of such corrective medical or surgical treatment as is indicated by the results of the examination and is in accordance with the latest teachings of otology. In the accurate diagnosis of a lesion of the ear, determination of the threshold of hearing, for both bone and air conduction, at various frequencies by a reliable audiometer is desirable.

Modern otology has shown that defective hearing in children often results from pathologic conditions in parts of the body other than the ear itself. Dr. E. P. Fowler and others have reported the frequent coexistence of sinusitis and inflammatory disease of the ear in children. A tendency to repeated colds and nasopharyngitis is a common cause of otitis media. Likewise faulty methods of swimming and diving as well as prolonged exposure of the body to cold water produce inflammation of the tube and middle ear, as pointed out by Dr. H. Marshall Taylor, chairman of the American Medical Association Committee on the Otorhinologic Hygiene of Swimming. Malnutrition, a deficient diet, endocrine imbalance, allergy, anemia and various systemic diseases are all recognized causes of diminished hearing acuity. According to Taylor the effects of chenopodium, salicylates, quinine and many other drugs in susceptible persons produce a loss of hearing acuity. He also suggested that the administration of certain drugs to a pregnant woman may cause deafness in the new-born child.

A cause of loss of hearing in children which too often is overlooked is the frequent recurrence of adenoid masses or adhesions adjacent to or about the pharyngeal cushions of the auditory tubes, whose function their presence often impairs. Chronic suppurative otitis media because it not only causes loss of hearing but because it is a constant menace to life itself should never be neglected.

Many perplexing cases of insidiously increasing loss of hearing from obscure causes may be solved by the cooperation of the otologist and the pediatrician, together with the occasional help of consultants in other highly specialized fields of medicine. Modern otology is rapidly becoming less tolerant of the defeatist attitude, as our knowledge of the causes of diseases of the ear resulting in loss of hearing increases.

CONCLUSIONS

1. Accurate periodic testing of the hearing by modern scientifically approved methods is necessary for the early discovery, diagnosis and successful treatment of many diseases of the ear which result in impairment of hearing.

¹ Since the paper was read Pennsylvania has passed legislation similar to that of New York State effectively providing for annual audiometer tests of all school children and for the necessary educational and medical follow up.

2 The incorporation in the school health program of the regular periodic testing of hearing of all school children has proved to be the most effective single procedure for reducing the incidence of loss of hearing

3 There is urgent need for the enactment of federal and state laws which will make possible the incorporation in the public school health program of periodic audiometric tests of all school children, especially in rural areas

4 Increasing interest in the health of the preschool child is a special challenge to the pediatrician, since he has the first opportunity to determine the presence of diseases which threaten the integrity of the organ of hearing

78 South Ninth Street

ABSTRACT OF DISCUSSION

DR AUSTIN A HAYDEN, Chicago Let me first express the appreciation of the Committee on Deafness Prevention of the American Academy of Ophthalmology and Otolaryngology for the inclusion of Dr Newhart's paper, "The Early Detection and Treatment of Defective Hearing in Children" in a pediatric program. The conservation of hearing begins long before we are born and ends only on the postmortem table. Obviously the entire life span of the conservation of hearing can be touched on only at its highest spots. Modern genetics definitely points to a close relationship of certain types of loss of hearing (otosclerosis) with the family history of the individual. Post-mortem examination of ears will lead great assistance to the problem that Dr Newhart has brought before this section. I am not so optimistic as to believe that any number of pediatricians will buy audiometers or use tuning forks in a routine way. In the emphasizing of these new methods I make a plea that the older methods, including the careful attention to the case history, the statements of the parents and other people that come in contact with the child are not to be overlooked. Neither are the whisper, the watch tests and the tuning forks to be done away with. But all these should be properly correlated in a sort of universal screening test by any method whatever that is readily available, because almost any method is better than no attention to the ears at all. When the children with defective hearing have been selected by any of the foregoing means, individual tests of the 4 or 5 per cent of children in public schools that these tests show to have loss of hearing should be conducted to an otologist's office. No one has done more for the perfection—indeed very few as much—of these procedures and the plea for their universal adoption than has Dr Newhart.

DR LEO S FRIEDMAN, Cincinnati I congratulate Dr Newhart on his excellent presentation of a very timely subject. I am from a city which has been taking a leading part in this work. Largely through the interest of Drs McCarthy and Howard, Cincinnati is doing her share in the early detection and correction of hearing defects in children. About 12,000 hearing tests are carried out each year, which reveal about 900 children with hearing defects. Of this number, 500 are referred to private physicians and the remainder to a well organized clinic under the guidance of experienced workers. The latest reports indicate that approximately 52 per cent of these defects have been corrected. But valuable as this work is, I believe we are not getting at the cause sufficiently early, that is, in the infant and the preschool child. Of course it is realized that audiometer tests cannot be carried out until after 4 years of age has been reached. Particular care must be taken with regard to the nutrition diet and hygiene of infancy. Many young babies who regurgitate their feedings through the nose and are allowed to remain on their backs may be predisposed to ear infections and thus to hearing defects. Repeated evidence of this has been found in very young babies. Immunization against the preventable diseases, such as measles, diphtheria and scarlet fever and the early treatment of syphilis meningitis and the like will go far in the solution of this problem. The early use of such agents as immune globulin represents valuable aid in the prevention of defects of hearing.

MYXOFIBROMA OF THE SPERMATIC CORD, POSSIBLY NEUROGENIC

REPORT OF A CASE

ABRAHAM L WOLBARST M.D.

NEW YORK

Compared with the frequency of cysts of the spermatic cord which are fairly common,¹ tumors are quite rare. In 1934 Burr,² reviewing the literature on cord tumors, found a total of 219 reported cases, including two which he then reported. Two years later, however, Thompson,³ again reviewing the literature on the subject, found a total of 216 cases after eliminating a few which he thought were subject to doubt.

Burr classified the 219 growths on the basis outlined by Hinman and Gibson⁴ as follows: lipomas, 58; embryomas, 47; fibromas, 28; sarcomas, 27; dermoid cysts, 21; connective tissue cysts, 14; angiomas, tumors, 6; unclassified, 6; myxomas, 5; myomas, 5; tumors of the wolffian body, 2; total, 219.

Hinman and Gibson conclude that of all tumors of the cord, epididymis and testis 90 per cent occur in the cord, of these fibroma constitutes about 11 per cent. It will be seen that twenty-eight cases of cord fibroma have thus far been reported.

Patel and Chalier⁵ and Rubaschow⁶ made extensive studies of cord tumors. They conclude that fibroma seems to originate in that portion of the spermatic cord which is near its junction with the epididymis, and they arise from the connective tissue which unites the various elements of the cord at that point. They are slow growing and cause no symptoms other than the swelling. The majority of patients give histories of having noted the tumors for a number of years before seeking medical attention. The average interval is six years. The tumors are usually benign.

While twenty-eight fibromas and five myxomas of the cord have been reported there is no mention in Hinman and Gibson's classification of myxofibroma, of which three cases have thus far been reported. In the present contribution, a fourth case is reported.

REPORT OF CASE

H. K., a man aged 55 complained that he had had an annoying sensation (not a real pain) in the left side of the scrotum for about one year. His general health was excellent. He was somewhat nervous and he was a persistent golfer, but there was no history of trauma or serious illness. The first physician whom he consulted said that he had a hernia, for which he prescribed a truss which was worn for several months without benefit. Another physician told him that the trouble was mental but even that did not help him. The annoying sensation persisted.



Fig. 1—Gross specimen of tumor

- 1 Wolbarst A. L. Urol. & Cutan. Rev. 1: 1926
- 2 Burr G. C. Grace Hosp. Bull. 18: 4, 1934
- 3 Thompson C. J. Surg. Gynec. & Obst. 62: 72 (April) 1936
- 4 Hinman Frank and Gibson T. E. Tumors of the Epididymis, Spermatic Cord and Testicular Tunic. Arch. Surg. 8: 100 (Jan) 1924
- 5 Patel and Chalier. J. Urol. 70: 167, 10, 1909
- 6 Rubaschow S. Zt. f. Urol. 20: 14, 21, 42, 1926

On examination, Jan 12, 1937, a mass was observed attached to the left cord about midway between the external ring and the epididymis. Though it was not translucent it was believed to be a cyst. Excision was advised and performed February 26 a local anesthetic being used. On exposure the tumor, approximately the size and shape of a large green olive, was found attached to the tissue elements of the cord by a broad base.

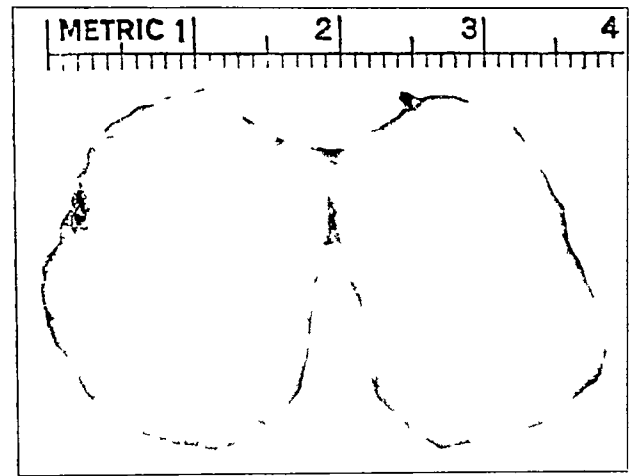


Fig. 2—Transverse section of tumor

Apparently all the cord elements were fused together at that point by inflammatory tissue. The vas deferens lay posteriorly and appeared to be closely adherent to the rest of the cord. It was impossible to determine any particular tissue from which the tumor derived. The tumor was dissected from its adherent base with little difficulty; bleeding was slight. The wound was closed and the patient made an uneventful recovery. Four months after operation he reported feeling well with complete disappearance of the annoying sensation in the scrotum.

On gross examination the tumor was firm and solid and rather whitish. The pathologist made the following report:

"Tissue from the spermatic cord on macroscopic examination measured 3 by 2 by 1 cm. It weighed 4 Gm. It was nodular and on cut section was solid and showed whorls of connective tissue and had a definite capsule. There were areas that had a glazed appearance."

Microscopic examination revealed a tumefaction that was composed of clumps of elongated nuclei in cells of the neurilemma type which were in a palisade arrangement. Frequent myxomatous areas were present. There was a definite capsule present in this tumor. There were no histologic characteristics present which denoted where the tissue arose.

"The diagnosis was neurofibroma of the spermatic cord."

Since neurofibroma of the cord has never been reported, it was considered essential to have this pathologic diagnosis confirmed before it was accepted as final. The specimen was therefore submitted to Dr. Alfred Plaut, pathologist of Beth Israel Hospital, whose report follows:

Gross Examination—Ovoid, firm (previously fixed), seemingly capsulated nodule, 3 by 2 by 1.5 cm. The cut surface in the present condition of the specimen is pale gray with some indistinct water-silklike markings.

Microscopic—The picture mainly is that of a partly edematous fibroma. In some portions the connective tissue fibers are thick and coarse with relatively few nuclei; in others, notably the edematous ones, they are very fine. Further differences are caused by the irregular distribution of inflammatory processes. Round cells, small and medium sized ones, are accumulated in the adventitial tissue of blood vessels. There are round aggregations of such cells in different portions, and there are some more diffuse infiltrations. In the highly edematous areas the connective tissue cells have assumed rather irregular, partly starlike shapes resembling myxomatous tissue.

The mucicarmine reaction is not very distinct. All the coarser fibers and most of the fine ones become definitely red in the van Gieson stain. No structures suggestive of nerves or undifferentiated nervous tissue can be found. The irregularity of character in some portions is best explained by the edema. The same applies to the unusually large and irregularly shaped cells which, to repeat it, are found only in edematous areas.

Diagnosis—Partly edematous fibroma.
"Since no normal tissue is found, no definite statement can be made about the origin of the tumor. In the scrotal region the possibility of a postinflammatory condition always has to be considered. No definite evidence for such an origin is found in the specimen. Another possibility in this location is that of an originally mixed tumor with one-sided development."

There were thus two conflicting diagnoses, the point at issue being the nature of the many fine fasciculi—whether they were true ganglion cells or merely inflammatory or edematous products. To settle the question Dr. James Ewing kindly consented to study the slides, with the result as shown by his reports that the nature of the growth still remained without a definite diagnosis. Dr. Ewing's reports follow:

May 10, 1937: "Your tumor from the spermatic cord is difficult to interpret. There are two possibilities: neurofibroma and a tumor of the cremaster muscle. I do not find satisfactory evidence of a neurogenic origin, although in one of the smaller sections the periphery of the tumor is highly fibrous and suggests the epineurium of a nerve trunk. It may also be nothing more than the capsule laid down around a tumor of some other origin. In some points there are fasciculi which commonly resemble neurofibroma. There is also much hyaline keloidal material which suggests a nerve origin. Neither of these features is sufficient to prove a neurogenic origin."

On the other hand, the whole structure is just as well derived from muscle tissue and the mucous character with

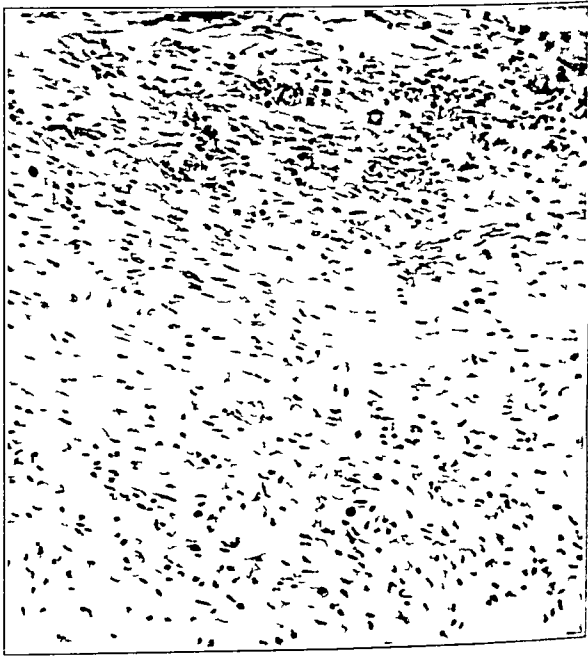


Fig. 3—Section under low power X 180

marked edema as well as the fasciculi are sometimes seen in muscle tumors. I cannot positively identify any muscle elements, but there are very suggestive features of muscle relations. Most of the tumor is inflammatory in origin with marked edema. Since silver stains only axons, I do not think it will help in making our diagnosis. We will put through some silver stains and if they add any information I will let you know. At present I presume we will have to call it low-grade hyaline myofibroma, not malignant, but I cannot

positively exclude a neurogenic origin. Muscle tumors are rather common in the cord, and neurofibroma very rare.⁷

The second report from Dr. Ewing, dated May 25, follows:

The various specimens stained from your tumor of the spermatic cord, including selective H and E, van Gieson and silver, fail to show any specific features which help the diagnosis. I can find no special nerve fibers but one would hardly expect to find them in a tumor so well differentiated. The fibers do not show any definite qualities of muscle. They are all collagenous. There are quite a few very large multipolar cells some of which look like ganglion cells but I do not think they can be identified as such. The exact nature I cannot determine. This leaves us without a positive diagnosis of any sort except myxofibroma.

The evidence of anatomic position is of first importance under such circumstances. Was the tumor connected with the vas deferens or the cremaster muscle or the fat tissue? At present all I can say is that you have a myxofibroma of benign character and undetermined origin.⁸

The tumor was studied as a matter of interest by a fourth noted pathologist, Dr. Paul Klemperer of Mount Sinai Hospital who reported (verbally) that he agreed in general with Drs. Plaut and Ewing and expressed the opinion that the fasciculi were fibroblasts, despite their strong resemblance to ganglion cells. On the verbal advice of Dr. Ewing the tumor is therefore reported as a myxofibroma possibly neurogenic.

COMMENT

The various diverse opinions on the nature of this tumor offered by the four eminent pathologists who studied it emphasize the fact that it is frequently difficult for pathologists to agree on the proper category of a given tumor. The main question involved in this case was the interpretation of certain tumor elements which suggested a neurogenic origin. Microscopically, according to Karsner,⁷ "the neurofibroma often resembles the fibroma but is likely to show many delicate fibrils and small whorls of cells and fibrils. In many neurofibromas there are rows of cells with palisade arrangement of nuclei and an intervening band of parallel wavy fibrils."

Reference to the photomicrographs distinctly shows the presence of structures resembling spindle cells with wavy nuclei and intervening myxomatous tissue which might very readily be suggestive of a neurogenic basis. It will be observed that Dr. Ewing says that he cannot positively exclude a neurogenic origin of the tumor. In his reports he mentioned several features which suggest a neurogenic origin. 1. In one of the smaller sections the periphery is highly fibrous and suggests the epineurium of a nerve trunk. 2. In some points there are fasciculi, which commonly resemble neurofibroma. 3. There is also much hyaline keloidal material, which suggests a nerve origin. 4. There are a few very large multipolar cells some of which look like ganglion cells. While he did not feel justified in making a definite diagnosis of neurofibroma on this evidence he did not exclude it—a fact of much significance.

The site of the tumor, far removed from a nerve trunk, would seem to eliminate a neurogenic origin but, as Boyd⁸ says, "in neurogenic fibromas it is often impossible to detect any apparent connection with a nerve of some size." With these facts in mind one cannot ignore the possibility of a neurogenic origin of this tumor (neurofibroma), though I accept the diagnosis of myxofibroma because of the preponderance of expert opinion.

A careful search of the literature reveals reports of three myxofibromas to date but a possible neurogenic origin is not involved in any of these cases. They were reported respectively by Goodhart⁹, Mayer¹⁰ and Starlinger¹¹. The present case is the fourth myxofibroma of the cord thus far reported, and the first with a possible neurogenic origin.

SUMMARY

The myxofibroma of the spermatic cord here reported presents unusual features and is apparently the

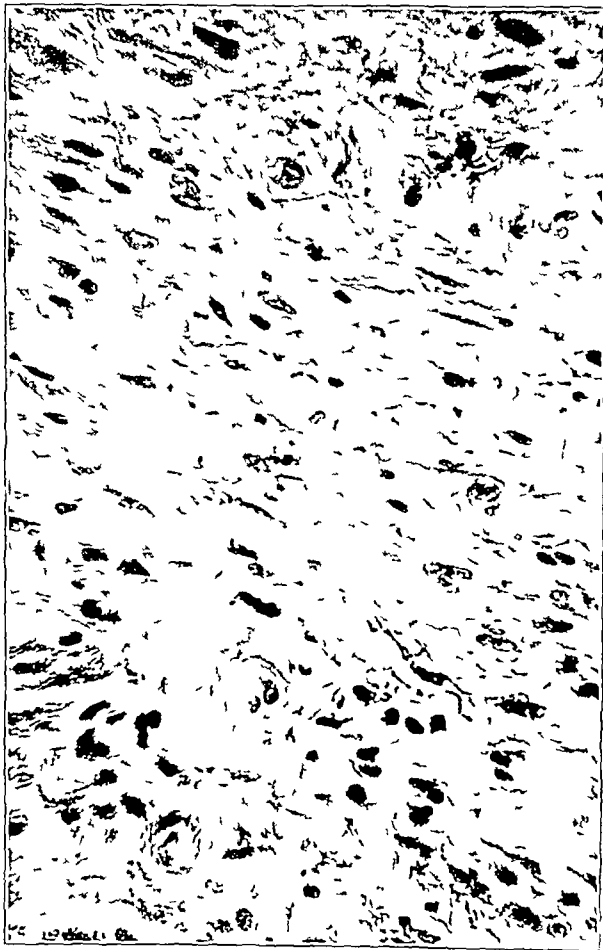


Fig 4.—Section indicating possibly neurogenic elements. $\times 450$

fourth case recorded, if certain suggestive elements were accepted as of neurogenic origin the tumor would be classified as a neurofibroma of the cord—the first case to be recorded.

114 East Sixth-First Street

- 9 Goodhart J F. Tr. Path. Soc. London 31 310 1880
10 Mayer H. Ztschr. f. Urol. 13 1 1919
11 Starlinger T. Ztschr. f. Chir. 189 408 1925

Methods of Attack on Noise Abatement—The first line of attack on noise abatement and in general much the most effective and economical is to tackle an objectionable noise at the source and find the best means of reducing the output as much as possible. The next step possibly as a confession of failure is to find a feasible method of confining or smothering the noise in the place where it is generated. In either case we turn to the engineer for help and we may anticipate that he is likely to be the more interested if he can see a potential demand from the public.—Kaye G W C. *Noise and the Nation*, *Nature*, Sept 18 1937 p 490.

7 Karsner H T. Human Pathology, ed 4 Philadelphia J B Lippincott Company 1935 p 373.
8 Boyd William. Text Book of Pathology, ed 2 Philadelphia Lea & Febiger 1934 p 934.

Clinical Notes, Suggestions and New Instruments

GANGLIONS OF TENDON SHEATHS

A METHOD OF TREATMENT

CARL BEARSE M.D. BOSTON

While ganglions may disappear spontaneously, years sometimes elapse before this takes place. One patient, a physician, had a ganglion for ten years before spontaneous rupture occurred. Since ganglions usually occur on the wrist and are embarrassing deformities, and since they may also cause discomfort most patients prefer prompt treatment.

Of the many methods that have been advanced in the past for the treatment of ganglions the one that has been generally accepted is excision.¹ It is obvious that the simpler methods that have been recommended—that is, forcible rupture with a heavy object such as a book, puncture with a hypodermic needle, injection of an irritant such as iodine, scarification of the walls of the sac, and the like—are not always successful otherwise operation would not be advocated.

The pathogenesis of ganglions is not too well understood, the commonly accepted theories are that they may be due to a herniation of synovial membrane through a rent in a tendon sheath, that they may be due to colloid degeneration of a synovial fringe inside a tendon sheath or that they may be due to cystic degeneration of an area of connective tissue adjacent to a joint or a tendon. They occur most commonly in people who have constant wrist and finger motion, as for example typists, pianists and washwomen, and they may follow an injury or strain. Therefore, unless there is a change in occupation or no further strain or trauma, the likelihood of further ganglion formation must be considered.

Excision however, is not the ideal treatment. While it does permit the complete removal of a ganglion, it does not remove the possibility of further ganglion formation. Moreover, excision carries with it objections inherent to any operative procedure, except possibly to a lesser degree. Should there be a recurrence or should ganglions appear at other sites, operation may again have to be done.

While puncture of a ganglion with a hypodermic needle was one of the methods advocated in the past the results were not satisfactory since the thick gelatinous contents of the ganglion could not be thoroughly evacuated. I have found that puncture of a ganglion with a large bore needle such as that used in blood transfusions is always effective. It not only ruptures the ganglion but at the same time permits the complete evacuation of the sac. Following puncture and evacuation, a tight bandage is applied for twenty-four hours. Should recurrence or further ganglion formation take place this treatment by puncture can be repeated as often as necessary. As a result of this method of treatment the discomfort to the patient is minimized, the drawbacks of operation are avoided and there is no scarring.

REPORT OF CASES

The following cases illustrate the value of this method.

CASE 1—Mrs D L, a housewife, aged 30, had a ganglion the size of a marble on the dorsum of the left wrist for three months. It was punctured March 7, 1928 and as late as April 17, 1937, nine years afterward there had been no recurrence.

CASE 2—Mrs N C, a housewife aged 27, had a ganglion the size of a marble on the dorsum of the right foot for six months. This was punctured June 23, 1928, and by April 16, 1937, almost nine years afterward there had been no recurrence.

CASE 3—Mrs D K, a housewife aged 32, had a ganglion the size of a large pea on the ventral surface of the left wrist. The ganglion was punctured Sept. 20, 1928 and by April 21, 1937, almost nine years later there had been no recurrence.

CASE 4—Mrs P H, a housewife, aged 35 had a ganglion on the right wrist of two years' duration. The ganglion was the size of a cherry. It was punctured July 7, 1932. The following December it recurred and was larger than before. It was punctured again, with no recurrence up to April 16, 1937, almost five years later.

CASE 5—Miss S K, a commercial student, aged 19 had been operated on two years previously for a ganglion on each wrist with resulting scars. Several months after excision further ganglions appeared. At examination, Sept. 13, 1935 she had three ganglions of the left wrist and one of the right which were punctured. When seen four months later she again had a ganglion on each wrist, these were also punctured. Eight months later another ganglion appeared on the left wrist which was likewise punctured. When last seen, in March 1937 three months later, there had been no further ganglion formation. These ganglions always appeared at different locations on the wrists.

This patient continued with her daily typing after each treatment by puncture. Seven ganglions in all were punctured without the scarring, inconvenience, expense and risk that would have followed operations.

CASE 6—F F, a schoolgirl, aged 13 years, had a ganglion the size of a filbert on the left wrist. This was punctured Jan. 22, 1934, as late as April 16, 1937, more than three years afterward there had been no recurrence.

SUMMARY

1 Puncture of ganglions with a large bore needle such as used in blood transfusions is advocated.

2 This ruptures the sac and permits complete evacuation of the thick gelatinous contents of the ganglions.

3 Excision of ganglions, with the drawbacks inherent to any operation and its resulting scar is not necessary.

483 Beacon Street.

THE USE IN ARTERIOGRAPHY OF SUBSTITUTES FOR COLLOIDAL THORIUM DIOXIDE

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In the two cases here presented roentgenographic visualization of the arteries and veins in the region of arteriovenous fistulas was obtained by the use of diodrast, one of the iodine containing solutions manufactured primarily to be used in excretory urography.

CASE 1—A Negress aged 17 years was stabbed in the upper third of the left arm with an icepick, Sept. 14, 1936. Almost immediately a thrill and a loud continuous bruit with systolic accentuations were found present over the medial surface of the swollen and ecchymotic arm. The radial pulse on this side was weaker than on the other. Five days later the circumference of the left arm 15 cm above the olecranon was 25 cm, and of the normal arm 20 cm. The venous pressure on the left was 235 mm (1 per cent sodium citrate) on the right 60 mm.

Nine days after admission, the brachial vessels were occluded above the fistula by digital compression, and 10 cc of diodrast was injected into a vein in the cubital fossa. The roentgenogram taken immediately afterward is shown reproduced as figure 1. The region of the fistula is at the top of the film where the radiopaque fluid extravasated into a false aneurysm. The lower portion of the basilic vein and the veins communicating with the brachial artery are well shown. The brachial artery itself is visualized from the region of the fistula to well below its bifurcation into ulnar and radial arteries. Several other smaller veins and arteries are seen, one of which is probably the profunda brachii.

Suddenly, on the tenth day following the injury, the arm became tensely swollen and painful. Evidently a large false aneurysm had formed. Operation was done with the patient under cyclopropane anesthesia a tourniquet being held high on the arm by transfexion pins. The basilic vein was found

uninjured A large amount of blood clot was removed from around the median nerve and brachial vessels, and the brachial artery and vena comitans were ligated individually and divided at the site of the injury, about 2 cm below the origin of the profunda brachii artery The opening in the side of the artery was seen, but the orifice into a vein could not be located The wound was left dry and closed anatomically without drainage, fine interrupted silk sutures being used

The radial pulse was palpable but weak immediately after the operation There was no further circulatory disturbance and the wound healed by first intention A venous pressure determination on the day of discharge, October 8, was 150 mm in the left arm and 65 mm in the right

CASE 2—A Negress, aged 11 years, a ward of the Kentucky Home Society, admitted to the hospital March 15, 1937, had stepped on a nail four years previously The child pulled it out and iodine was applied at the point of entrance Three days later the bottom of her foot swelled and remained swollen Two years later the prominence had increased and for the past year she had walked with her foot inverted because of tenderness over the mass The history was otherwise irrelevant



Fig 1 (case 1)—Brachial arteriovenous fistula visualized by a solution intended for excretory urography (diodrast)

The girl was rather poorly nourished, but there was no notable abnormality except in the right foot On the medial two thirds of the plantar surface was a soft, elevated bluish compressible moderately tender swelling 4 cm in diameter The mass pulsated deeply and after compression swelled up again like a sponge No thrill could be felt but a continuous blowing bruit with systolic accentuation was heard with a stethoscope Even light pressure of the stethoscope stopped the bruit and if the foot was elevated about 20 cm from the bed the pulsation and bruit both disappeared

Examination of the heart and a roentgenogram of the chest were negative and the electrocardiogram was normal The arterial pressure readings were right arm 102 systolic 60 diastolic, left arm 110/80 right leg, 140/90, left leg, 140/110 There was no bradycardiac reflex Blood aspirated from the swelling was bright red

A roentgenogram showed a soft tissue mass on the plantar surface of the right foot The bones appeared normal March 25, with the patient under light ether anesthesia, the right posterior tibial artery was isolated With the cuff of a sphygmomanometer inflated to 200 mm of mercury below the knee 10 cc of diodrast solution was injected and a roentgenogram was taken immediately The film obtained is shown in figure 2, in which the anterior and posterior tibial arteries, the plantar arch and the veins filled through the fistula are seen The exact point of the fistula is not apparent but it is in the region of the plantar arch

Shortly afterward with the patient under ether anesthesia and with the field made dry by a sphygmomanometer cuff on the leg a curved incision was made along the medial side of the foot and a flap of skin and subcutaneous tissue was

turned back down to the plantar fascia There were huge dilated veins in the superficial plantar tissues which emerged through small openings in the plantar fascia The fascia was divided by an L-shaped incision, exposing the flexor digitorum brevis This was divided transversely and the ends were retracted By careful dissection the sacculated, irregularly thickened veins were displaced, allowing the retraction of the plantar nerves the partial division of the anterior portion of



Fig 2 (case 2)—Injected arteries and veins before operation in the region of a plantar arteriovenous fistula

the quadratus plantae and the retraction medially of the flexor digitorum longus and the adductor hallucis muscles The plantar arch and the mass of veins firmly attached to it by old fibrous tissue were excised the sphygmomanometer cuff was released the field was made dry and the parts were approximated anatomically without drainage, with fine interrupted silk sutures The wound healed by first intention and there was no disability of the foot

An arteriogram made May 1, three weeks after operation (fig 3), showed deficiency in the plantar arch and no filling of the veins

COMMENT AND CONCLUSIONS

Because of the possibility that the injection of radioactive thorium dioxide solution may cause late toxic symptoms



Fig 3 (case 2)—Arteriogram after excision of the fistula

colloidal thorium dioxide (thorotrast) has not been used in our hospital except for experiments on animals Although several years have elapsed without evident harm to the first patients injected with colloidal thorium dioxide those who recall the delayed symptoms of toxicity in the workers engaged in painting watch dials with a solution containing mesothorium will prefer to use other materials for arteriography The present stand of the Council on Pharmacy and Chemistry of the American Medical Association with regard to the use of

thorium dioxide is to be found in a recent editorial.¹ A more detailed statement was published in 1932.²

Diodrast, *neoskidan*, *uroselectan* and similar preparations made for excretory urography are nontoxic in the doses used and are quickly excreted from the body. They do not damage the intima of the vessels and do not cause pain on intravascular injection (as does sodium iodide).

The density of the shadow cast by diodrast and similar iodine-containing solutions when utilized for arteriography is not quite so striking as with colloidal thorium dioxide. However, the visualization is entirely satisfactory, as may be seen in the illustrations. These should be compared with roentgenograms pictured in the articles of Horton,³ Yater,⁴ and Veal and McCord,⁵ who are the chief advocates of the use of colloidal thorium dioxide.

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SIGNIFICANCE OF TRAUMA AND INFECTION IN THE SYNCYTIAL REACTION OF PREGNANCY

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The response of the endometrium to hyperestrogenism and normal pregnancy is well known. In some instances, however, this response is so excessive as to simulate neoplasia and particularly chorionepithelioma. Recently it has been pointed out¹ that in the presence of experimental hyperestrogenism associated with trauma to or infection of the endometrium an

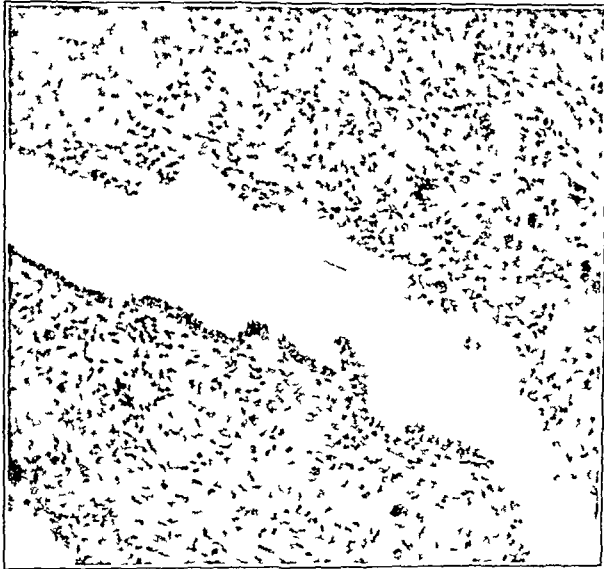


Fig. 1—Syncytial cells in mucosa and superficial myometrium $\times 200$

atypical and exaggerated response follows. The case in question illustrates the combined effect of these three factors on the human endometrium: (1) hyperestrogenism, (2) trauma and (3) infection in the production of a syncytial response so unusual as to arouse serious suspicions of the presence of a chorion

1 Potential Hazards of the Diagnostic Use of Thorium Dioxide, editorial, J. A. M. A. 108:1626-1627 (May 8) 1937.

2 Thorotrast: Preliminary Report of the Council on Pharmacy and Chemistry, J. A. M. A. 99:2183-2185 (Dec. 24) 1932.

3 Horton, B. T. Arteriovenous Fistula Involving the Common Femoral Artery Identified by Arteriography, Am. J. M. Sc. 187:649-652 (May) 1934.

4 Yater, W. M. A Study of Four Cases of Acquired Arteriovenous Fistula by Means of Thorotrast Arteriography, Ann. Int. Med. 10:466-486 (Oct.) 1936.

5 Veal, J. R. and McCord, W. M. Congenital Abnormal Arteriovenous Anastomoses of the Extremities with Special Reference to Diagnosis by Arteriography and by the Oxygen Saturation Test, Arch. Surg. 33:846-866 (Nov.) 1926.

From the Departments of Pathology and Obstetrics and Gynecology, the George Washington University School of Medicine.

1 Overholser, I. D. and Allen, Edgar. Atypical Growth Induced in Cervical Epithelium of the Monkey by Prolonged Injection of Ovarian Hormone Combined with Chronic Trauma, Surg., Gynec. & Obst. 60:129-136 (Feb.) 1935.

epithelioma. The histologic differentiation of atypical syncytial reactions from true chorionepithelioma is frequently difficult and often the distinction can be made only on the basis of gonadotropic hormone studies.²

REPORT OF CASE

Mrs. H. D. M., aged 28, white, was referred to one of us (B. N.) Nov. 23, 1936. The previous family and personal

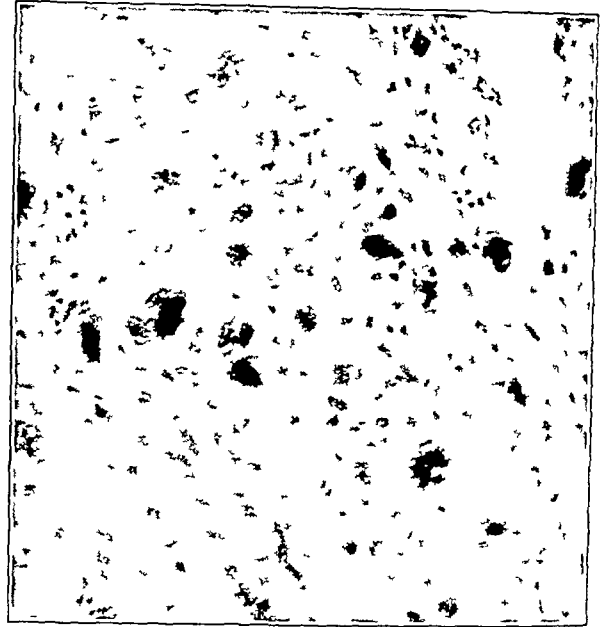


Fig. 2—Underlying myometrium densely infiltrated with multinuclear trophoblastic and foreign body giant cells $\times 200$

history were irrelevant, aside from the fact that a gold stem pessary (for contraception) was inserted into the uterus in 1930, removed and cleansed every three months during 1930 and 1931.

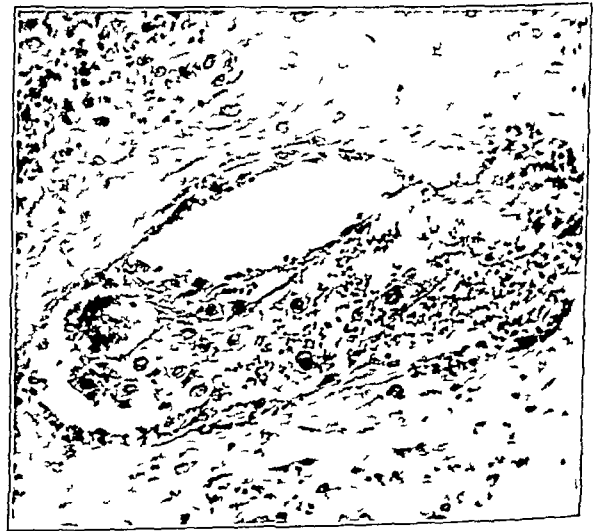


Fig. 3—Diffuse decidual reaction showing invading Langhans cell hanging in clusters within the vessel lumen $\times 200$

and left in situ during 1932 and 1933, a total of about four years. She had noticed no abnormal symptoms of any kind and had had normal menses during this four-year period. She began to menstruate at the age of 13. The duration was from five to six days with a twenty-eight-day interval.

2 Zondek, Bernhard. Gonadotropic Hormone in the Diagnosis of Chorionepithelioma, J. A. M. A. 105:607 (Feb. 29) 1937.

The present illness began with spontaneous vaginal bleeding, which followed two and one-half months of amenorrhea. A few fragments were expelled and discarded by the patient before she was seen. After fifteen hours of active bleeding, the uterus was emptied and a few fragments of thickened decidua tissue were obtained which did not appear abnormal.

The pathologic examination revealed that the specimen consisted grossly of irregular masses of soft tissue which were a brownish white and varied in size from 0.5 to 1 cm in diameter. They were interspersed with a generous amount of freshly coagulated blood. Microscopic examination (figs 1, 2, and 3) showed that the mucosa was markedly hyperplastic and infiltrated throughout with large multinucleated giant cells of a syncytial character. The glands were dilated, deep, irregular in shape and lined with secretory epithelium of the lutein phase. The interstitial substance was markedly edematous, showing hemorrhagic extravasation associated with a diffuse infiltration of large wandering cells and broad sheets of Langhans cells. The blood vessels were markedly dilated and surrounded by embryonic cells, which had infiltrated through their walls and hung free in clusters within the lumen.

The general picture was not unlike what one would expect to find in a chorionepithelioma. Owing, however, to the extreme difficulty of making a positive diagnosis of such a

cycle. There was no evidence of a malignant condition. The patient has since made an uneventful convalescence and is now none the worse for her experience.

COMMENT

The case illustrates an exaggerated syncytial reaction which histologically was not unlike that of a chorionepithelioma. The presence of Langhans cells within the lumen of the dilated vessels made the diagnosis all the more apparent. The stormy endometrial reaction was probably due to the combined effect of a low grade infection plus the trauma produced by the long continued use of a metal stem pessary. The manufacture and sale of these appliances should be prohibited. The case also illustrates the importance of the gonadotropic test in the differential diagnosis of uterine scrapings when chorionepithelioma is suspected.

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PYLEPHLEBITIS DUE TO PERFORATING DUODENAL ULCER

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Recently we observed an instance of portal thrombophlebitis and multiple liver abscess following invasion of the vein by a perforating duodenal ulcer. This fistulous sequel is one of many that may result from perforation of a peptic ulcer. The review by Monroe¹ indicates that depending on the location of the lesion in the stomach or proximal intestine any contiguous viscus may be invaded. From the stomach, morbid connection has been found leading to the spleen, transverse colon, duodenum and, through the diaphragm, to the lung, the pericardium and even the heart from the duodenum to the pancreas, pancreatic duct, gallbladder, biliary duct and portal vein. The last eventuality is mentioned in textbooks,² but few actual cases have been reported either in detail or by brief account. It is also more unusual to find reference to pylephlebitis originating in duodenal rather than in gastric ulcer although this distinction is of little importance in the evolution of the sequel. Six³ records of perforating gastric ulcer followed by pylephlebitis are given in the older journals and several⁴ notations without description, of this instance may be found. While reports of four⁵ cases have been discovered—all in the earlier literature—which are similar to the present one in only two⁶ of these is there a suggestion of the direct relation here witnessed, i.e. the separate transfer of infection from the duodenum to the vein without intermediary peritoneal abscess.

When the juxtaposition of the portal vein and the ulcer-bearing area of intestine is considered it is somewhat surprising that the occurrence of portal vein infection is not more frequently encountered.



Fig. 4—Endometrium from second curettage showing a normal quiescent reaction of the prevulatory phase. $\times 100$

condition from microsections alone it was recommended that the patient be treated expectantly until the result of a gonadotropic hormone test was known. The test performed two weeks after the curettage was negative. Expectant treatment was continued for the next two months, after which time the uterus had undergone complete involution and the patient was symptom free.

In view of the previous pathologic changes, however, a second gonadotropic hormone test was performed with negative results, and also a second curettage, the report of which is as follows. The specimen consisted of a small portion of uterine scrapings which consisted of a few small brownish white pieces of tissue, which were irregular in shape and soft in consistency. The individual portions varied from 3 to 5 mm in diameter. Microscopic examination (fig. 4) showed that the surface and glandular epithelium was regular in outline and quiescent in nature. The interstitial tissue was moderately edematous but showed no cellular infiltration or evidence of activity. The general appearance was that of a normal endometrium in the prevulatory stage of the menstrual

- From the Medical Service of the Peter Bent Brigham Hospital.
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 2. Rolleston H. D. and McEneaney J. W. Diseases of the Liver, Gallbladder and Bile Ducts, ed. 3. London: Macmillan Company, 1929.
 3. These include:
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 4. Brown W. I. Suppurative Pylephlebitis. *Brit. Med. J.* 2: 1393, 1396, 1905.
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 5. Warfvinge F. W. Case of Suppurative Pylephlebitis and Ulcer of Duodenum. *Schmidt's Jahrb.* 193: 130, 1882.
Hahnershon S. O. Ulceration of the Duodenum. Extension into Portal Vein. *Tr. Path. Soc.* 27: 135-137, Carrington⁴, Bryant³.
 6. Carrington⁴, Hahnershon⁵.

REPORT OF CASE

History—A man, aged 40, a traveling salesman, admitted to the hospital, complained of fever, chills and sweats of six weeks duration. One sister was known to have peptic ulcer proved by roentgenologic study, and another suffered from chronic indigestion.

For fifteen years the patient had noticed hunger pains or epigastric distress about one hour following meals with relief



Fig 1—Appearance of barium filled stomach and duodenum showing clearly the deformity of the duodenal cap. The enlargement of the liver is demonstrated by displacement of the stomach toward the left and inferiorly.

by ingestion of alkaline powders or milk. There had been definite qualitative dyspepsia in that fatty foods repeatedly had caused flatulence. Physicians had given him milk and cream regimens at the times of exacerbation and he had obtained benefit. However no adequate period of treatment had been enforced.

Two months before the onset of his final illness the patient had begun to experience distress again in the upper part of the abdomen. Two weeks later while on a business trip he was seized with a shaking chill followed by fever and sweating which lasted four days. Returning home because of the persistence of this illness, he was seen to become intensely jaundiced toward the end of the next week. The icterus faded slowly from that time. The only notable abdominal pain suffered was at the time of taking cholagogue tablets prescribed by his physician because of developing jaundice when there was sharp discomfort in the right upper quadrant. Shortly before entrance bloating and enlargement of the abdomen appeared. Hospital admission was advised because the patient continued to have a fever of from 101 to 104 F, have chills and sweats of several hours duration and steadily lose both strength and weight.

Examination—The patient was prematurely gray, he looked quite sick and spoke in a whisper. The sclerae showed slight icterus. The skin was pale and sallow, there was evidence of a recent loss of weight. The tongue appeared beefy and dry. The heart showed no abnormality other than persistent tachycardia. Arterial blood pressure measured 130 mm of mercury systolic and 85 mm diastolic. The bases of the lungs posteriorly were relatively dull on percussion. The abdomen was protuberant with bulging flanks, definite fluid wave and shifting dullness, there was very slight tenderness in the right upper quadrant. Liver by ballottement could be felt two fingerbreadths below the right costal margin in the mid-clavicular line, its upper border reached the fifth rib. A splenic nontender edge could just be felt. External hemorrhoids were present.

On admission the value for hemoglobin was 65 per cent (Sahl's method), erythrocytes numbered 3,100,000 and leukocytes 20,000 per cubic millimeter of blood, 74 per cent of the leukocytes were polymorphonuclear neutrophils and 26 per cent were lymphocytes (100 cells counted). The early urine specimens contained no bile but urobilin (two plus on a scale of four). The icteric index of the blood serum was 10 as compared with the normal value of 5. The Wassermann and Hinton reactions of the blood serum were negative. Stool examination by the mercury bichloride test showed bile present in small amount, the guaiac test for occult blood was negative. Microscopic examination revealed no amebae or cysts. Blood culture was negative after seventy-two hours. Blood chemistry studies gave values for nonprotein nitrogen of 24 mg per hundred cubic centimeters, sugar, 85 mg total protein 47 Gm per hundred cubic centimeters, albumin 24 Gm globulin, 23, showing a moderate inversion of the albumin globulin ratio. The Takata-Ara test was negative. Agglutination reactions for typhoid, paratyphoid A and B and undulant fever, and the Weil-Felix reaction for typhus fever were all negative these being done because of the prolonged pyrexia. Abdominal paracentesis yielded 1500 cc of hazy, straw-colored fluid of specific gravity 1.004 which contained 300 erythrocytes and 1,150 leukocytes per cubic millimeter, 85 per cent of the leukocytes being polymorphonuclear neutrophils. No tumor cells were found in stained sections of the clot. The total protein of this fluid was 0.83 Gm per hundred cubic centimeters, albumin 0.40 Gm, globulin 0.43 Gm and nonprotein nitrogen 18 mg.

X-ray examination of the chest showed the right diaphragm elevated and limited. Gastro-intestinal films and fluoroscopy proved the duodenal cap constantly small and irregular indicating an ulcer. No evidence of perforation could be seen (fig 1).

Hospital Course—This was hectic, with exhausting chills and sweats and fever, it was early swinging in type then, before death, widely excursive (fig 3). On the last day the patient was found to have a rigid neck and a bilateral positive Kernig sign but a lumbar puncture drew fluid under low tension with blood cells that proved by postmortem study to be of traumatic origin.

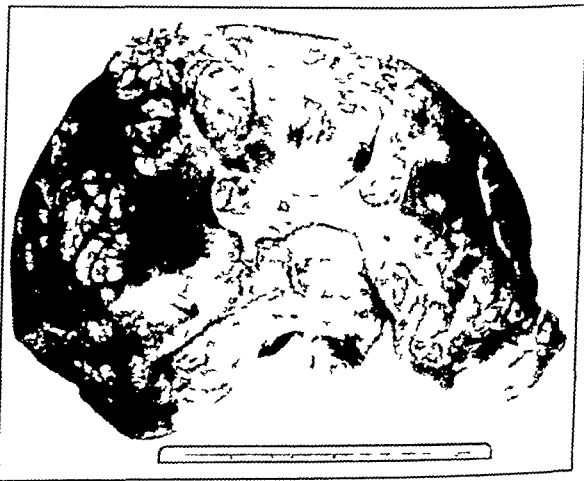


Fig 2—Cut surface of the liver to indicate arborizing distribution of abscesses in relation to divisions of the portal vein. In the center are seen thrombi within the lumen of a large venous channel.

Before x-ray examination had shown the duodenal location of the ulcer gastric carcinoma with hepatic metastases was considered with the accompaniment of active infection. The disease process also was suggestive of cholangitis with infectious cirrhosis or more than usual storminess. No doubt remained in the face of jaundice, hepatomegaly and the high polymorphonuclear percentage of cells in its contents that the locus of sepsis was hepatic but even after an ulcer had been demonstrated in the intestine no causative relation was assumed.

Necropsy—This revealed a liver containing multiple abscesses (fig 2), the portal vein filled with infected thrombi and suppurative material throughout its hepatic branches. The duodenal ulcer was verified, lying in the posterosuperior wall, and the ulcer bed was found adherent by an inflammatory fibrous tract to the portal vein. It was shown that the ulcer had not perforated into the free peritoneal cavity but had penetrated through scar tissue posteriorly to within from 1 to 2 mm of the lumen of the portal vein. There was no patent sinus tract. Rather, the perforation had resulted in a so called blind fistula with its apex at the venous trunk. Thrombophlebitis was widespread, this being traced downward into the splenic and mesenteric veins. Within the veins the purulent exudate was of a thick, creamy consistency. There were fibrous adhesions between duodenum, gallbladder and transverse colon. The spleen was much enlarged. The gallbladder was distended but contained no calculi. The vermiform appendix showed a bulbous tip but otherwise was normal. The pancreas was intact. The prostate was slightly enlarged. The inferior vena cava exhibited no changes. The heart and its valves showed no pathologic signs. There was moderate passive congestion in the lungs. The brain was swollen, hyperemic and edematous.

COMMENT

The proximity of the duodenum in its first part to major venous channels is pointed out by this consequence. The main portal vein lies intimately on the posterior surface of the intestine, separated only by sheaths of peritoneum, before it ascends in the free border of the gastrohepatic ligament to the liver. While other avenues of perforation are rightly expected in the majority of chronic ulcers, it is not unlikely that the occurrence here detailed should sometimes be observed. Any attempt to avoid this sequel in cases of known ulcer necessarily is dependent on the general measures of ulcer management. The calamity apparently is beyond hope of amelioration once it has occurred and here treatment can be only supportive. Presumptive diagnosis is possible in similar cases, and the concurrence of evident liver sepsis and ulcer history with fluoroscopic demonstration should argue for a direct causal relation.

SUMMARY

A case of pylephlebitis and hepatic suppuration was secondary to perforation of duodenal ulcer, an infrequent but dire complication of this common disease of the intestine.

Skeptical of Authority—The doctors' books are of a different sort from the lawyers' and the preachers. They in their professions depend as yet largely upon authority. The doctor, ever since Galen was toppled from his dominating seat has been skeptical of authority and perhaps too much inclined to novelty. But if he makes any pretense of 'keeping up' with the amazing prodigious and often revolutionizing advances which through some new discovery, occur almost overnight he must read or attend meetings—or better both—Cushing, Harvey, Consecratio Medici and Other Papers. Boston: Little Brown & Co. 1928.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN

THE USE AND ABUSE OF ERGOT AND PITUITARY

M. EDWARD DAVIS, M.D.

CHICAGO

This is one of a series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION—ED.

Ergot and solution of posterior pituitary are the most important oxytocic drugs in the pharmacologic armamentarium. Their judicious use has been a boon to the practice of obstetrics. Properly used they are of inestimable value in the course of labor and the puerperium, often contributing directly or indirectly to the saving of human life. However, their indiscriminate use has led to disastrous results for mother and baby. In fact, many authorities have intimated that the undesirable consequences of the improper use of these oxytocic drugs have outweighed the good that they have accomplished. It is because of this serious indictment that the review of the proper indications for the use of these oxytocics in obstetrics may be timely.

ERGOT

Ergot is a fungus that attacks rye and other grains, making them unfit for consumption. The crude drug contains many constituents, but it owes its oxytocic activity largely to the alkaloids which it contains. Many of the pharmacologic investigations of ergot concern themselves with the isolation and study of these alkaloidal constituents. Tanret¹ in 1875 isolated ergotamine, which proved to be inert. Barger and Carr² in 1906 isolated ergotovine, which was found to have oxytocic activity. Stoll³ in 1918 isolated the isomers ergotamine and ergotammine, only the latter alkaloid exhibiting oxytocic properties. Other alkaloids, namely, sensibamine and ergoclavine, have been described. It remained, however, for a group of investigators in 1934 to isolate and describe a new water soluble alkaloid which for the first time satisfactorily accounted for most of the desirable oxytocic activity known to exist in ergot.⁴ The Council on Pharmacy and Chemistry of the American Medical Association has given the name of ergonovine to this new alkaloid.

The chemical and pharmacologic properties of this new substance have been carefully evaluated by a number of investigators, all of whom agree that this new

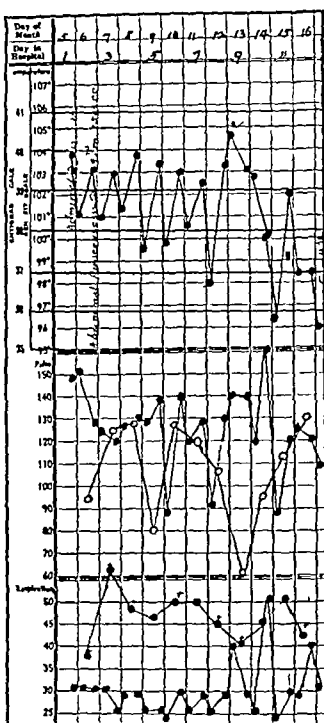


Fig. 3.—Clinical chart to show fluctuations in temperature (top) and pulse rate (middle) with terminal respiratory irregularity (below).

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¹ Tanret Charles. *Compt rend Acad d sc* 18 896 1875.

² Barger G and Carr F H. *Chem News* 94 89 (Aug 24) 1906.

³ Stoll A. *Verhandl d Schweiz naturf Gesellsch* 1920 p 190.

⁴ Davis M F, Adair F L, Rogers Gerald, Kharasch M S, and Legault R R. *Am J Obst & Gynec* 29 155 (Feb) 1935.

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⁵ Ergonovine editorial J A M A 106 1012 (March 21) 1936.

water soluble, crystalline ergot base, which has the formula $C_{19}H_{23}N_3O_2$, is responsible for most of the oxytocic properties of active ergot preparations⁶

Although this new alkaloid is proving to be highly desirable as a therapeutic agent in obstetrics, the continued investigations on ergot have been productive of a great deal of new information. The extensive researches of Jacobs and Craig⁷ have demonstrated that lysergic acid is the only characteristic fission product common to the four pairs of alkaloids, thus, the final chapter in the chemistry and pharmacology of ergot still remains to be written.

The ergot preparation in the Pharmacopeia of the United States is the fluidextract. When prepared according to official instructions it should contain most of the ergonovine present in the crude drug on which its oxytocic potency depends. The official assay by the U S P cock's comb method will determine this potency. Ergonovine can best be assayed biologically by means of the isolated rabbit's uterus, the official cock's comb method and the isolated rabbit's intestine, and by a colorimetric procedure.⁸ There is considerable variation in the content of this potent alkaloid in the various samples of ergot obtained from one locality and a much greater variation in ergot obtained from different geographic locations.

The present status of ergot therapy has been considerably simplified. The official fluidextract, when properly prepared and stored, provides a good ergot preparation which can be taken by mouth in 30 to 60 minims (2 to 4 cc) doses two or three times daily. It occasionally provokes unpleasant reactions such as nausea and vomiting, in which case its use should be discontinued. Prolonged administration may result in the phenomenon of ergotism, which usually manifests itself in the form of a dry gangrene of the extremities. The drug should therefore not be continued beyond ten days.

The new ergot base ergonovine in the form of a salt may be used orally and parenterally because of its crystalline character. The malleate salt of the base is stable and satisfactory for therapy. For oral administration from 0.2 to 0.4 mg can be given two or three times daily. It has an advantage over the fluidextract preparation in that it can be given intravenously in 0.2 mg doses for its immediate effect when this is desirable. The parenteral routes of administration may be necessary in patients who are under anesthesia or when the oral route is contraindicated. Although as yet no cases of ergotism have been ascribed to ergonovine, prolonged administration of huge doses in experimental animals have resulted in this phenomenon.⁹

The characteristic response of ergot can best be seen in the immediate postpartum period. Some ten or fifteen minutes following the oral administration of the drug, the uterus exhibits increased activity. The normal uterine contractions are increased in rate and severity. The uterine musculature develops considerable tonicity, so that the organ does not completely relax between contractions. This increased muscular tone may persist for as long as an hour, but the rate and intensity of the contractions continue for one or even two hours after the uterine tetany has subsided. The increased rate and

vigor of the contractions and the tetany are both desirable features during the puerperium, for they probably promote a more rapid uterine involution as well as control postpartum bleeding.

Ergonovine does not affect pulse, blood pressure or urinary output. It is therefore particularly indicated in patients who exhibit any of the vascular-renal manifestations of the toxemias of late pregnancy. Fluidextract of ergot contains chemical constituents such as the amines, which may affect blood pressure.

SOLUTION OF POSTERIOR PITUITARY

The oxytocic activity of extracts of the posterior pituitary gland was demonstrated by Dale⁹ in 1906. Blair Bell¹⁰ three years later introduced this most important therapeutic agent in obstetrics. It was not until 1928 that Kamm and his co-workers¹¹ succeeded in separating posterior pituitary into two fractions, one containing the oxytocic principle, pitocin, and the second the diuretic and pressor principle, pitressin.

Solution of posterior pituitary U S P contains both principles and is the most commonly used pituitary preparation in obstetrics. It is standardized as to oxytocic activity. The oxytocic standard is such that each cubic centimeter contains not less than 8 and not more than 12 international units. The international unit, as adopted by the League of Nations, is the amount of oxytocic activity obtained by 0.5 mg of an international standard powder. The pressor principle is so adjusted as to be of the same magnitude as that produced by a comparable solution of a standard pituitary powder.

The pharmacologic action of posterior pituitary is quite uniform. It is entirely inactive when given by mouth. Its intramuscular or subcutaneous administration causes the initiation of uterine motility in from three to five minutes. The uterus contracts vigorously, remaining in this tonic state for several minutes, and, as the tonus diminishes, increasingly vigorous contractions occur. The action of the drug lasts for five or ten minutes and rapidly disappears, to be reinitiated by another dose. The intravenous administration of small doses, 3 minims (0.2 cc), provokes an immediate response. However, the general reaction to this mode of therapy is sometimes quite marked. The patient may develop a marked circumoral pallor, a sense of constriction in the chest, pain in the back of the head, marked palpitation, nausea and occasionally vomiting, simulating shock. The reaction may last several minutes or longer and gradually disappears without any serious effects.

Solution of posterior pituitary has a variable effect on blood pressure of normal persons. Usually they show little or no elevation of blood pressure after therapeutic doses. The pallor which may develop is not an index of a change in blood pressure. However, in patients with hypertension a marked elevation occurs after intravenous or intramuscular administration of the drug. The rise in pressure is transitory and is followed by a return to normal. Solution of posterior pituitary also causes a diminution in the urinary output, which likewise becomes more marked in patients with kidney damage. A temporary anuria may occur in patients with toxemia of pregnancy. These abnormally marked effects of pituitary solutions on blood pressure and urinary output in patients exhibiting toxemia of pregnancy make the use of this drug undesirable in this group.

⁶ Kharasch M S and Legault R R J Am Chem Soc 57 1140 1935
⁷ Kharasch M S and Stanger D W Bloodgood M A and Legault R R Science 82 36 (Jan 10) 1936
⁸ Jacobs W A and Craig L C J Biol Chem 113 767 (April) 1936
⁹ Dale H J 227 (Aug) 1936
¹⁰ Bell W B Adair F L Chen K K and Swanson E E J Pharmacol & Exper Therap 54 398 (Aug) 1935
¹¹ Kamm O Aldrich T B Grote J W Rortz I V and Burgee E J J Am Pharm A 21 830 (Oct) 1935

⁹ Dale H J Physiol 21 163 1906
¹⁰ Bell W B Brit M J 2 1699 1909
¹¹ Kamm O Aldrich T B Grote J W Rortz I V and Burgee E J J Am Chem Soc 50 573 1928

Dieckmann and Michel¹² noted that parenteral injections of extracts of the posterior lobe of the pituitary were followed by a marked decrease in the volume of urine, an increase in the chloride concentration, and an average rise in the systolic pressure of 51 mm of mercury pressure in a group of patients with pre-eclamptic toxemia studied during pregnancy. Less marked changes were noted in normal gestation. In addition to warning of the inadvisability of using solution of posterior pituitary as an oxytocic drug in patients exhibiting evidences of toxemia, these authors suggest that the changes induced by the drug may be of some diagnostic and prognostic value in the management of these cases.

INDICATIONS FOR OXYTIC DRUGS

Nonpregnant Patients—Although solution of posterior pituitary will cause some contractions and tonicity of the uterus of the nonpregnant person, it is rarely indicated. The pathologic cause for the bleeding should be determined and treated. Any increased bleeding at the time of the menstrual periods or bleeding occurring between periods is sufficiently serious to warrant a careful examination and a correct diagnosis. It is never justifiable to give ergot or pituitary extract as a temporary expedient in the hope that this will control the bleeding unless one is absolutely certain that the underlying pathologic process causing the abnormal bleeding can await treatment.

Therapeutic Abortion—Oxytocic drugs will not terminate a normal gestation in the first trimester of pregnancy. The uterus is not responsive to ergot and pituitary during this period. Experimental evidence would indicate that the corpus luteum of pregnancy inhibits uterine response to posterior pituitary extracts. As term approaches the uterus becomes more and more susceptible to the action of this substance. Near term one can cause the uterus to contract vigorously after the administration of the drug.

Although oxytocic drugs fail to initiate an abortion in a normal pregnancy, ergot and pituitary may be used to hasten or to complete the process once it has begun. In inevitable and incomplete abortions, solution of posterior pituitary can be used in 0.5 to 1 cc doses intramuscularly with benefit to the patient. This will cause increased uterine motility which may result in a complete and rapid termination of the process or the evacuation of portions of the products of conception still in the uterus. Profuse bleeding should be controlled by curettage and packing if necessary. Following the completion of an abortion, ergot can be given orally for several days to limit the bleeding and favor normal involution.

Induction of Labor—The medicinal induction of labor is rarely successful until term is approached. This is probably due to a lack of sensitivity on the part of the uterine musculature to oxytocic stimuli. If, therefore, it is necessary to induce labor for some complication prior to term, one usually has to resort to mechanical means. The method of medicinal induction of labor at or near term at the Chicago Lying-in Hospital consists of the following procedure: Castor oil, 1½ ounces (42 cc), is given early in the morning, followed two hours later by quinine in 3 grain (0.2 Gm) doses at hourly or half hourly intervals for four or five doses, followed by graduated doses of solution of posterior pituitary, beginning with half a minim (0.03 cc) and increasing half a minim at each dose fifteen minutes apart until

3 minims (0.02 cc) is given. The latter dose can be repeated until a total of 1 cc is used. The uterus should be carefully observed, and if it exhibits tetanic contractions so that the fetal heart tones are interfered with, solution of posterior pituitary is discontinued. In the rare event that the continued tonic state of the uterus so seriously interferes with the uteroplacental circulation that the fetal heart rate is dangerously slowed, it may be necessary to administer ether to the patient for several minutes to relax the uterus. The administration of the drug is stopped when regular rhythmic contractions are initiated in the course of the induction.

Labor—The oxytocic drugs are almost never indicated during the first and second stages of labor. It is dangerous to interfere with the normal uterine motility. Solution of posterior pituitary given during the course of labor initiates a marked tetany of the uterus. As this tone diminishes, the uterine contractions increase in severity and frequency. This abnormal uterine action may result in an interference with the placental circulation resulting in fetal asphyxia and even death. It may likewise result in an interference with the uterine circulation and subsequent damage to the uterine musculature. The force of the uterine contractions driving the presenting part against an incompletely prepared passageway may result in serious lacerations of the cervix, the vagina or perineum or, in the event that the resistance offered by these structures is too great, the uterus may rupture. Furthermore, the abnormal stimulus provided by the solution of posterior pituitary may completely alter the normal course of labor so that serious operative interventions may be necessitated in an attempt to save a baby in jeopardy or to conclude an abnormal labor.

Occasionally uterine inertia develops as a result of a lack of tone on the part of the uterine musculature or because of the general physical condition of the patient. Oxytocic drugs are rarely indicated in stimulating uterine contractions. The underlying condition that is responsible for the inertia should receive proper treatment. Thus, physical exhaustion on the part of the patient from a long, arduous labor may be best treated by sedatives. A period of complete rest will often result in a recurrence of normal uterine activity and a rapid completion of the labor. In some cases rupture of the membranes under proper conditions provides a satisfactory stimulus to poor and ineffective pains. At other times a hot enema may do the same thing. Rarely is it advisable to give solution of posterior pituitary. If this is done, the dosage should be limited to 1 or 2 minims subcutaneously. This should not be repeated many times. If there is any tendency to uterine tetany or to abnormal uterine motility, or if the fetal heart rate or rhythm is disturbed, the drug should be immediately discontinued and the uterus calmed with a narcotic.

Solution of posterior pituitary and ergot find their greatest usefulness in the third stage of labor. Used judiciously and with the proper indications the oxytocic drugs may often prevent the occurrence of postpartum hemorrhage and the serious results that may be caused by it.

In the normal conduct of the third stage of labor it is usually advisable to await the complete separation of the placenta, after which its expulsion can be aided. Immediately after the birth of the placenta, 1 cc of solution of posterior pituitary can be given intramuscularly. In the event that the patient has had no anesthetic, fluid extract of ergot can be given by mouth or ergonovine can be given parenterally. These oxytocics

¹² Dieckmann W. J. and Michel H. L. Am J Obst & Gynec 33: 131 (Jan) 1937

should help maintain the uterus in a contracted state, avoiding any unnecessary bleeding

If excessive bleeding occurs after the delivery of the baby and prior to the placental separation, one should administer 1 cc of solution of posterior pituitary intramuscularly. The placenta can then be expressed by Crede's method. If this procedure fails to separate and expel the placenta, one should consider its manual removal in the face of continued hemorrhage.

Should excessive bleeding occur after the expulsion of the placenta, one must determine the cause for the bleeding. Uterine atony is only one of the causes for postpartum hemorrhages. Pastore¹³ recently reported that it accounted for only 22 per cent of the hemorrhages occurring in his series of cases. Portions of the placenta may be retained in the uterus, resulting in a failure of the uterus to remain contracted. These fragments must be manually removed under proper aseptic conditions, after which oxytocic drugs will usually control further bleeding. Trauma of the soft parts, such as deep cervical tears and uterine rupture, may lead to serious and even fatal postpartum hemorrhage, which, needless to say, no oxytocic drugs will control. A careful diagnosis must always be made before the indiscriminate use of drugs is resorted to. When the hemorrhage is the result of uterine atony, solution of posterior pituitary in 1 cc doses should be given subcutaneously or intramuscularly. Small doses, from 2 to 3 minims, can be administered intravenously in an emergency regardless of the possible reaction. Pastore reports five cases of pituitary reactions in his series of ninety-six postpartum hemorrhages, with one fatal case possibly due to the use of pituitary. Ergonovine is the ideal drug because of the rapidity of its action and the sustaining character of the effect. It can be given in 0.2 mg doses intravenously. If the patient is awake, fluidextract of ergot can be given by mouth.

Postpartum hemorrhage accounts for 10 to 12 per cent of the maternal deaths that occur every year. It is therefore a serious contributing factor to the high maternal mortality. It is a complication that is ever before the mind of the obstetric attendant. The rapidity of its onset, its magnitude and the rapid development of the serious symptoms often overwhelm the accoucheur. The careful and orderly management of this complication and the proper use of oxytocic drugs will usually result in a favorable outcome.

PUERPERIUM

The use of oxytocic drugs in the puerperium has enjoyed almost universal popularity. Ergot has been the therapeutic bulwark for this period. It has been credited with hastening normal involution, decreasing the likelihood of late postpartum bleeding, limiting the probable spread of intra-uterine infection if present, and helping to maintain the genital organs in the best state possible.

Normal uterine involution is the physiologic process by which the puerperal uterus is rapidly reduced to about one-twentieth its size and returned to the normal nonpregnant state. Many factors may influence this important function and result in a large, boggy uterus. This subinvolution of the uterus predisposes to infection, to late postpartum bleeding and to subsequent malpositions. Davis, Adair and Pearl¹⁴ demonstrated the fact that improper lochial drainage as a result of

lack of muscular tone often contributes to a retardation of normal involution. Oxytocic drugs stimulate uterine contractions and tone, thereby favoring a more rapid involution.

Infection of the uterus or its appendages seriously delays involution. The relaxed uterus favors the retention of infected clots in its cavity and a spread of this infection in the genital organs and to environmental structures. A lack of uterine tone may result in an extension of infected thrombi from the vessels in the placental site. Theory and practice favor the maintenance of the uterus in a state of tone by the use of oxytocic drugs.

It has been the accepted practice at the Chicago Lying-in Hospital to prescribe ergot in the puerperium for delayed involution. Fluidextract of ergot, from 30 to 60 minims three times daily, or ergonovine maleate, from 0.2 to 0.4 mg three times daily, can be given to patients who have had a postpartum hemorrhage, a difficult forceps delivery, intra-uterine manipulation, abnormal lochia, fever regardless of the cause, or delayed involution without cause. This therapy is kept up for at least three days or as long as is necessary, this medication should be rarely continued beyond a week or ten days, however, because of the danger of ergotism. If uterine contractions become too painful, the dose of the drug is reduced or entirely omitted. The prophylactic use of ergot to assure a normal involution is probably of some value, although further studies will be necessary to confirm this impression.

THE ABUSE OF PITUITARY

Posterior pituitary preparations have been woefully misused in the conduct of obstetric cases. It has been given indiscriminately in the first and second stages of labor to increase the intensity of uterine action and to speed up the normal processes. Normally, uterine motility is a well regulated, physiologic action resulting in steady, even, though at times slow, progress of labor. However, this progress is accomplished with a minimum of danger to the birth passageway and the passenger. During the first stage the uterine contractions progressively increase in frequency, duration and intensity. However normally this uterine activity skilfully produces effacement and dilatation of the cervix. The uterus, like all muscular organs, relaxes between contractions to allow for recovery of its musculature and for the proper continuation of an adequate placental circulation. The second stage, during which the baby is gradually pushed through the birth canal is likewise orderly. Now the baby's head or presenting part is carefully driven against a resisting pelvic floor which must be slowly stretched to allow for the ultimate passage of the baby.

Solution of posterior pituitary upsets this carefully synchronized mechanism of labor. Violent uterine contractions initiated by oxytocics drive the baby's head against a partially effaced and dilated cervix. Soft tissues are battered, bruised or torn. The intensity of the contractions often results in deep cervical lacerations or, when the resistance offered by these structures is too great, in ruptures of the contractile and isthmial portions of the uterus. The tetany of the uterus interferes with the placental circulation, and asphyxia or death of the baby is the inevitable consequence. In the second stage the violent uterine contractions initiated by pituitary may result in extensive, irreparable damage to the soft tissues and the pelvic floor in brain hemorrhage in the baby. Babies are literally driven through unprepared passageways at a terrific cost to them and to their

13. Pastore, J. B. *Am. J. Obst. & Gynec.* 32: 280 (Aug.) 1936.
14. Davis, M. E., Adair, T. L. and Pearl, Sarah. *The Present Status of Oxytocics in Obstetrics*. J. A. M. A. 107: 261 (July 25) 1936.

mothers De Lee¹⁵ says he feels certain that the indiscriminate use of pituitary preparations is one of the four major causes responsible for the persistently high maternal and fetal death rates in the United States

Recent years have seen the introduction of a number of oxytocic preparations in which posterior pituitary is combined with some form of thymus gland extract This combination was heralded as the ideal oxytocic for labor, resulting in an increase in the effectiveness of the uterine contractions without the inherent tonicity and unbridled activity Thus, they are supposed to speed up labor along its normal physiologic course This utopian pharmacologic action so far has proved to be nonexistent, for these preparations represent pituitary solutions diluted with inactive thymus gland substance, retaining all the undesirable and dangerous action of pituitary It can thus be concluded that the physician who wishes to serve womankind conscientiously and honestly must allow labor to take its normal course, rarely resorting to expedients which might hasten the process but which inevitably carry in their wake injury, mild or serious, and even death to mother and baby

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

HOWARD A CARTER Secretary

CROSLY XERVAC NOT ACCEPTABLE

Manufacturer The Crosley Radio Corporation, Cincinnati

In the words of the manufacturer, "The Crosley Xervac is an apparatus designed to stimulate and aid the growth of hair and develop a healthy scalp condition by increasing the efficiency of the circulation of blood in the deep tissues of the scalp" Thus, the firm claims, is accomplished through the application of alternate positive and negative pressures by means of compressor and vacuum pump attached to a helmet and regulated by controls to suit the individual case It operates on either direct or alternating current The underlying theory is that the change in pressures will act as a pump filling and emptying the vascular network in the scalp so that increased circulation will result in nourishment of tissue and regrowth of hair This theory, in the opinion of the firm, has been substantiated clinically by its consultant who investigated and reported¹ on the unit

The Council on Physical Therapy investigated the apparatus and stated, in a preliminary report (THE JOURNAL, May 1, 1937, p 1505), that insufficient evidence had been presented to warrant inclusion of the unit in its list of accepted devices

Continuing its investigation, the Council studied twenty-seven cases treated with the Xervac The procedure consisted of half-hour sittings, three times a week Difficulty was experienced in obtaining a larger number of patients, particularly those with different types of alopecia, who were willing or able to take treatments over a long period of time A number of patients were seen only once or twice monthly, since they found it more convenient to be treated at barber shops or beauty parlors

While there is no agreement on classification for alopecia, the following common types of baldness seen by dermatologists are mentioned in this report

- 1 Alopecia seborrhoica (definite seborrhea of the scalp)
- 2 Alopecia systemica (loss of hair seemingly caused by a systemic disturbance, no evidence of a local disease)
- 3 Alopecia prematura (simply premature loss of hair)
- 4 Alopecia areata
- 5 Alopecia hereditaria (family history of early baldness, no evidence of scalp disease)
- 6 Mixed types
- 7 Alopecia idiopathica (cause unknown)

15 De Lee J B and Greenhill J P The 1936 Year Book of Obstetrics and Gynecology Chicago Year Book Publishers Inc 1936
1 Cueto A A Journal Lancet 59 571 (Nov) 1936

Common baldness usually consists of the idiopathic, hereditary or seborrheic types or a combination of two or three types An outline of the cases investigated by the Council is given in the accompanying table

A summary of the figures reveals three cases in which there was diminution of falling hair and new hair was growing, and two cases of increase of lanugo hair In sixteen cases the results were negative, while in the six remaining cases the results were unknown since no follow-up data could be obtained In five cases, less than one hour of treatment was given

All these cases were compared with a similar series in which other methods had been employed In the opinion of the Council, results were less pronounced in the cases treated by the Xervac than those achieved in the other series, in which topical remedies or conventional methods, such as massage and electric vibration, were employed

Report of Xervac Treatments

Patient's Number	Age	Hours of Treatment	Diagnosis Type of Alopecia	Results
1	24	12	Seborrhoica	Negative
2	19	4	Seborrhoica	Negative
3	60	8½	Seborrhoica	Negative
11	36	6	Seborrhoica	Negative
17	30	2	Seborrhoica	Unknown
23	63	¾	Seborrhoica	Unknown
6	34	10½	Systemica	Hair falling less new hair growing
9	38	4	Systemica	Negative
10	30	4	Systemica	Negative
12	26	¾	Systemica	Unknown
18	42	6½	Systemica	Hair falling less new hair growing
24	48	6	Prematura	Negative
26	30	2	Prematura	Negative
13	24	17	Prematura (probably hereditaria)	Some increase of lanugo hair
21	24	9½	Prematura (probably hereditaria)	Negative
4	50	5½	Prematura (seborrhoica et hereditaria)	Negative
8	24	3	Prematura (hereditaria or idiopathica)	Negative
7	29	12½	Areata	New hair growing hair has stopped falling
15	40	¾	Areata	Unknown
25	36	½	Areata	Unknown
19	30	10½	Areata (universal)	Negative
14	27	9	Hereditaria	Negative
16	30	15	Hereditaria	Negative
20	24	20½	Mixed (probably part systemic and part hereditary)	Definite increase of lanugo hair
3	29	26	X ray alopecia	Negative
22	60	1	Senilis	Unknown
27	27	4	Idiopathica	Negative

Results have not been encouraging compared to the amount of time and effort spent in acquiring them The only result seen in common baldness is an increase in lanugo hair (down) in a very few men who have taken regular treatment over a period of three or four months Whether or not this lanugo hair will change to real hair as a result of continued treatment will not be known for many months In most instances the results were negative

The prognosis is promising in the systemic type caused by febrile or other temporary diseases, and less favorable when the condition is due to long continued systemic disturbances Therefore, the few favorable results reported mean little The same is true for alopecia areata In this type the hair may never return, on the other hand it may return spontaneously at any time

Apparently the method in itself is not harmful, but that cannot be regarded as a recommendation An objection to the use of the Xervac arises from the possibility that in some barber shops and beauty parlors carelessness in the matter of sanitation may cause the spread of disease

In the opinion of the Council the results of the present investigation fail to support the claims of the manufacturer The Council on Physical Therapy voted not to include the Crosley Xervac in its list of accepted devices

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

FRANKLIN C BING, Secretary

THE APPLE IN THE MANAGEMENT OF DIARRHEA IN CHILDREN

The use of fresh apples in the dietary treatment of diarrhea in infants and small children has been much publicized within recent years. Latterly, preparations of dried and powdered apple have been similarly acclaimed. The Council realizes that a final evaluation of the usefulness of the apple, fresh or dried, can be obtained only after considerable clinical experience. The present review provides a brief survey of the evidence available at the present time.

HISTORY

The use of scraped raw apples as a home remedy for diarrhea can be traced back for many years in Germany and other European countries. Schachter¹ refers to an English book published in 1775 which describes the use of the fruit treatment (apples preferred) in dysentery. Heisler² reported in 1928 that the apple diet had been used in the Children's Clinic at Konigsfeld for twenty years or more and before that had been a familiar household remedy in the Schwartzwald. Moro³ of Heidelberg is usually credited with standardizing and introducing the apple diet to the medical profession. The use of apples in the treatment of diarrhea was first reported in the American literature by Burnberg⁴ in 1933.

CLINICAL RESULTS WITH RAW APPLES

The available clinical reports cover practically every kind of diarrhea that is encountered in pediatric practice.⁵ Most of the reports are favorable, not to say enthusiastic, although some are relatively uncritical and difficult to evaluate. Opinions vary considerably as to the efficacy of the apple diet in specific infectious diarrheas such as are encountered with the dysentery group of organisms. However, many authors have found that regardless of the cause or seriousness of the condition the apple diet is one of the most successful measures now available for terminating both acute and chronic diarrheas. Moro³ in his early report stated that, of fifty-two patients treated, twenty-two cases were diagnosed as acute dysentery, fifteen as dysentery, eight as celiac disease, five as mucous colitis, one as chronic dysentery and one as typhus fever. The most unfavorable report yet published is that of Smith and Fried,⁶

1 Schachter M. Quelques donnees sur l'histoire de la cure de fruits et specialement sur la cure de pommes selon Moro. *Heisler Med inf* 41: 37 (Feb) 1934.

2 Heisler A. Dennoch Landarzt. Munchen, Verlag der Arztl. Rundschau 1928.

3 Moro E. Zwei Tage Apfeldiat (roh und gerieben) zur Behandlung diarrhoischer Zustände im Kindesalter. *Klin Wchnschr* 8: 2414 (Dec 24) 1929.

4 Burnberg T L. Raw Apple Diet in the Treatment of Diarrheal Conditions in Children. *Am J Dis Child* 45: 18 (Jan) 1933.

5 These reports especially those in the foreign literature are too numerous to list in detail. Representative articles in the American and English literature other than those referred to elsewhere in this bibliography are:

Regliu A C. Diarrhea in Infancy and Childhood. *J Indiana M A* 26: 362 (Aug 1) 1933.

Earnshaw P A. The Raw Apple Diet in the Treatment of Dysentery. *M J Australia* 2: 305 (Sept 8) 1934.

Tompkins C A. Infant Diarrhea with Special Reference to Apple Therapy. *J Indiana M A* 25: 278 (June) 1935.

Giblin J and Lischner M D. The Treatment of Enteritis in Infants and Children with the Raw Apple Diet. *Arch Pediat* 52: 355 (June) 1935.

Mitchell J McK. The Treatment of Diarrhea in Infants and Children by a Diet of Raw Apples. *M Clin North America* 19: 301 (July) 1935.

Kahski S R. Raw Apple Diet in the Treatment of Diarrhea. *Texas State J Med* 31: 191 (July) 1935.

Borovsky M P. The Raw Apple Treatment for Diarrhea in Pediatric Practice. *Illinois M J* 70: 174 (Aug) 1936.

Stein H B. The Apple Diet in Treating Diarrhea in Infants and Children. *Colorado Med* 32: 608 (Aug) 1935.

Manville I A, Bradway Elizabeth M and McMinis Ayoc S. Use of the Apple and Apple Products in the Treatment of Summer Diarrheas and Enteritis. *Northwest Med* 35: 441 (Dec) 1936.

Bittner J E, Jr. Therapeutic and Preoperative Actions of Raw Apple Pulp. *ibid* 35: 443 (Dec) 1936.

6 Smith E E and Fried R J. Clinical Study of Apple Diet in Treatment of Diarrhea in Infant. *J Pediat* 10: 495 (April) 1937.

who have found that in their hands the apple diet is not more effective than other standard dietary procedures, for example, the use of so-called protein milk.

DIETARY PROCEDURE

The apple is used in varying amounts according to the age of the child and the requirements of the individual patient. Moro³ believes that only mellow ripe apples should be used, whereas Heisler² states that the immature sour apple is equally effective. All agree that the apple should be cored and the seeds removed, but opinions vary as to whether the apple should be peeled or unpeeled. For older children (1 year or older) from 1 to 4 tablespoonfuls of the pulp are fed every hour or every two hours for from twenty-four to forty-eight hours, or from 500 to 1,500 Gm daily. This is said to be equivalent to from seven to twenty medium sized apples.³ The caloric value of the fresh apple has been estimated⁵ as about 60 calories per hundred grams. Most reports indicate that although the scraped apple furnishes a fairly large amount of fluid it is not enough for the child's needs and water or weak tea is offered in addition. For children who are dehydrated, the parenteral administration of fluids may also be necessary. Either the tea or the apples may be sweetened by the addition of saccharin, or the apples may be sweetened with a small amount of ripe banana pulp. Tompkins⁵ reports that if the apple is not readily taken a carbohydrate preparation rich in dextrins can be sprinkled over it. After the first formed stool has appeared (usually in from twenty-four to seventy-two hours) the older children are placed on a carefully chosen transition diet consisting largely of cereal broths, zwieback or dry toast, meat broth, scraped beef and cottage cheese. Milk, vegetables and fruits are added gradually after about two days on the transition diet. A transition diet suitable for use in infancy is discussed later in the present report in connection with dried apple powder.

THE PHYSIOLOGIC BASIS FOR THE APPLE REGIMEN

Various theories⁸ have been advanced ascribing the success of this diet to some component of the apple. It has been suggested that the astringent action of the tannic acid compounds which are present in small amounts in the apple aids in protecting the mucous membrane of the gastro intestinal tract, but there is little direct evidence in favor of this view. Other investigators have attributed the beneficial effects of the apple to the malic and other fruit acids present. In support of this theory is the observation that certain fruit juices such as lemon and current juice have been observed to produce effects somewhat similar to those obtained with scraped apple. But apple sauce which has been rendered alkaline by the addition of sodium hydroxide has been shown to be as effective as the untreated fruit, an observation which is a serious obstacle in the way of the acceptance of the acid theory. Perhaps the hypothesis which is most frequently advanced is that the effectiveness of the apple may be attributed chiefly to pectin. This theory is supported by the observation that pectin alone or preparations of pectin and agar are reported to be practically as efficacious as raw apple pulp.⁹ Pectin has been assumed to exert its effect by removal of toxic substances because of its colloidal properties and its buffering action, and also because it may serve as a source of galacturonic acid in the intestine. There is evidence that rabbits fed pectin can handle more readily a toxic substance such as menthol, which is detoxicated by coupling with glycuronic acid and excreted in the urine.¹⁰ Much more evidence will be needed, however, before the precise mechanisms involved are made clear.

DRIED APPLE POWDER

Dried apple powder prepared under the sponsorship of the Munich Children's Clinic has been used in Europe since 1931.

7 Heisler A. Rehe Apfel Diet bei diarrhoischen Zuständen im Kindesalter und bei Erwachsenen. *Klin Wchnschr* 9: 403 (March 1) 1930.

8 Manville I A, Bradway Elizabeth M and McMinis Ayoc S. The Use of Apple Powder in the Treatment of Diarrhea and Its Rationale. *Canad M A J* 36: 223 (March) 1937. Also the articles listed in note 5.

9 Hunt J S. Observations on the Use of Raw Apple Pulp and Pectin Agar Mixtures in Pediatric Diarrheas. *Arch Pediat* (Nov) 1936.

10 Manville I A, Bradway Elizabeth M and McMinis Ayoc S. Pectin as a Detoxication Mechanism. *Am J Diet* 10: 570 (Oct) 1936.

and is reported to produce results similar to those obtained with scraped raw apple pulp¹¹ The apple powder is in fact considered by some clinicians superior to the scraped apple pulp for children under 1 year of age The powdered apple must be kept in a tight container to prevent absorption of moisture The powder is usually given (in from 4 to 10 per cent solutions) in amounts varying from a total of 24 to 36 Gm for babies under 1 year, or from 80 to 100 Gm for older children The apple powder is sometimes dissolved in boiled water or weak tea but may also be given in diluted skimmed milk Leffkowitz¹² recommends for mild cases in young infants a mixture consisting of equal parts of skimmed milk and water in which 5 per cent of apple powder is dissolved Sugar is omitted for the first two or three days and the mixture given in the volume to which the infant is accustomed Thus the infant usually receives from 30 to 45 Gm of apple powder daily, which Leffkowitz considers the maximum amount advisable On the second or third day 5 per cent of a dextrin-maltose preparation is incorporated After the fourth or fifth day the apple powder is gradually decreased and the concentration of milk and sugar increased until the infant is eventually returned to his normal feeding mixture In severe and chronic cases Leffkowitz administers a 2 to 5 per cent solution of apple powder in weak tea for the first six to twelve hours, and the return to the normal diet after normal stools have appeared is even more gradual than in the milder cases

SUMMARY

The evidence which is now available indicates that the apple is useful as a therapeutic agent in the dietary management of diarrhea The mechanism responsible for the reported success of this diet is not clear

Apple powder when suitably prepared is a wholesome food and offers a convenient preparation for use in the management of diarrhea of infancy and childhood It should be emphasized, however, that the use of the fresh or dried apple does not obviate the necessity for other measures, including parenteral administration of fluids when indicated, the careful selection of a suitable transition diet, and competent pediatric supervision

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED

FRANKLIN C BING Secretary

APPELLA APPLE POWDER

Manufacturer—The Appella Corporation, Yakima, Wash

Description—Powdered dried apple pulp A blend of powder produced from several varieties of apples selected for their high content of pectin and uronic acids

Manufacture—Selected apples, high in pectin and uronic acids, are thoroughly washed, cored, peeled and dried to a definite moisture content The partially dried apples are spray washed, flaked, treated with superheated steam to destroy micro organisms, vacuum dried, powdered, automatically packed and sealed in air tight containers To maintain color the apples are lightly treated with sulfur dioxide during the preliminary drying process The sulfur dioxide is largely removed in the final drying process The fruit is powdered in an air conditioned room with humidity ranging from 14 to 25 per cent Two per cent tricalcium phosphate is added to prevent caking

Analysis (submitted by manufacturer)—Moisture 2.0%, total solids 98.0%, ash 1.8%, fat (ether extract) 2.5%, protein (N \times 6.25) 1.5%, crude fiber 6.7%, reducing sugars before inversion 52.0%, sucrose [(total reducing sugars after inversion minus reducing sugars) \times 0.95] 17.1%, pectin (alcohol precipitate) 5.2%, uronic acids 9.2%, total carbohydrates other than

crude fiber (by difference) 84.1%, tannin and coloring matter 1.4%, total sulfurous acid 0.01%, total acidity (as malic acid) 2.9%, pH 3.5 Alkalinity of ash, equivalent to 240 cc of 0.1 N acid/100 Gm powder Sodium (Na) 0.11%, potassium (K) 0.87%, calcium (Ca) 0.015%, magnesium (Mg) 0.029%, copper (Cu) 0.0008%, iron (Fe) 0.0125%, phosphorus (P) 0.0014%, chloride 0.216%, total sulfur (S) 0.137%, silica (SiO₂) 0.01%, sulfur dioxide 0.0004%

Calories—37 per gram, 95 per ounce

Claims of Manufacturer—A wholesome food product, especially useful in the dietary management of diarrhea

LIFESTAFF NATURAL GRAIN PORRIDGE, WHEAT AND RYE

LIFESTAFF NATURAL GRAIN MEAL, WHEAT AND RYE

Manufacturer—Lifestaff Natural Food Company, St Louis

Description—Ground whole wheat and rye seed grains

Manufacture—Whole soft wheat and rye seed grains are sorted, sifted, mechanically cleaned and scoured Grains light in weight are discarded Specified amounts are mixed by hand, coarsely ground and sifted The coarse particles are ground again and mixed with small particles The product of coarse grinds is called "Porridge," whereas "Meal" is obtained by successive fine grinds Each product is bagged, weighed, closed and labeled

Analysis (submitted by manufacturer)—Moisture 8.8%, total solids 91.2%, ash 1.8%, fat (ether extract) 1.8%, protein (N \times 6.25) 12.5%, reducing sugars as invert sugar 2.9%, reducing sugars as dextrose 0.2%, crude fiber 1.7%, carbohydrates other than crude fiber (by difference) 73.4%

Calories—36 per gram, 102 per ounce

DUNN'S DIAMOND "D" BRAND GELATINS SUPER, AA, A, 1 EXTRA AND 1 GRADES

Manufacturer—Thomas W Dunn Company, New York

Description—Granular plain gelatins of different jelly strengths

Manufacture—Ossein, dry and green calf skin pieces and trimmings are soaked in milk of lime solution for from four to eight weeks, washed and steam cooked Runs taken off at different degrees of temperature, varying in jelly strength, are mixed, concentrated, filtered and jelled The sheets are stove dried, ground and packed Imported goods are passed by the U S Department of Agriculture at port of entry and must conform to Pure Food Standards Various makes are blended to produce the standard grades

Analysis (submitted by manufacturer)—(Range of analyses for all grades) Moisture 11.0 to 14.0%, ash 0.3 to 2.0%, fat none, protein (N \times 5.55) 8.3 to 87.0%, carbohydrates none, jelly strength of different grades 130 to 260

Parts per million Arsenic (As) 0.2 to 1.0, copper (Cu) less than 15.0, zinc (Zn) 0.0 to 20.0, lead (Pb) none, SO₂ none added

Calories—3.3 to 3.5 per gram, 9.4 to 9.9 per ounce

FOULDS MACARONI, ELBOW MACARONI FOULDS SPAGHETTI, ELBOW SPAGHETTI

Manufacturer—Foulds Milling Company, Libertyville, Ill

Description—Macaroni and spaghetti prepared from durum wheat semolina, water and salt

Manufacture—Durum wheat semolina, salted, is kneaded with water under corrugated steel rolls, forced through dies containing holes of appropriate diameter and shape to form the various types of macaroni and spaghetti, dried and packaged

Analysis (submitted by manufacturer)—Moisture 10.1%, total solids 89.9%, ash (other than NaCl) 0.6%, sodium chloride (NaCl) 1.0%, fat (ether extract) 1.8%, protein (N \times 5.7) 12.6%, crude fiber 0.2%, carbohydrates (by difference) 73.7%

Calories—3.6 per gram, 10.2 per ounce

¹¹ Wiskott A. Verwendung von Erbsenpulver in der Behandlung kindlicher Durchfallserkrankungen. Klin Wchnsch. 10 1252 (July 4) 1931 Schmidt H A Die Aplonadiat bei Ernährungsstörungen im Säuglingsalter. Kinderarztl Praxis 4 221 (May) 1933 de Rohan Barondes R Apple Powder Its Application to Intestinal Disorders A Simplification and Improvement on the Heissler Moro Raw Apple Diet Brit J Child Dis 34 48 (Jan March) 1937

¹² Leffkowitz M Behandlung diarrhoischer Zustände besonders im Säuglingsalter mit Apfelpulver Therap d Gegenw 73 44 (Jan) 1932

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SATURDAY, NOVEMBER 13, 1937

MINERALS AND INTESTINAL FLORA

The gastro-intestinal tract is not sterile, implantation probably takes place soon after birth. Under ordinary conditions there is such an enormous number of non-pathogenic bacteria in the intestine that it has been estimated that from one fourth to one third of the dry matter of the feces consists of bacteria. In herbivora such saprophytes are of great significance in the utilization of food, and the bacterial protein itself may under certain circumstances provide available nitrogen for the nutrition of the host. In man, under usual dietary conditions, the predominating organism present is the colon bacillus, which is known to bring about characteristic changes in unabsorbed residues of the digestion of protein as well as of the proteins of the intestinal secretions. It has long been known that toxic amines and also phenols are thus produced. Another type of organism, present in relatively small numbers, is the aciduric group. These bacteria act on various carbohydrates to produce lactic acid. Thus lactose and dextrin favor the predominance of the aciduric flora, the metabolism of which produces a medium unfavorable to the coli forms. The nature of the diet is therefore important in influencing the character of the intestinal flora.

A recent study by Eppright, Valley and Smith¹ emphasizes another factor in the control of the bacteria of the intestine. Their experiments were carried out on albino rats—animals with intestinal flora closely resembling that of man. A basal ration extremely poor in inorganic salts but containing a large proportion of dextrin was variously modified with a nutritionally complete salt mixture and with simple combinations of inorganic elements. With the low salt diet the fecal aciduric organisms in these animals practically disappeared within two weeks after the beginning of administration and were replaced by colon bacilli and enterococci. The complete salt mixture brought about a marked preponderance of aciduric organisms and concomitant loss of the "putrefactive" type. Acidophi-

lus could not be maintained in high concentration when sodium, potassium and chlorine, calcium alone or phosphorus alone were added to the basal salt-poor ration. On the other hand, calcium and phosphorus together in the diet produced a marked predominance of aciduric organisms and an accompanying decrease of the coli and enterococcus types. These studies leave little doubt that, when the other part of the diet is favorable, the presence of calcium and phosphorus is essential to the vigorous growth of the typical aciduric organisms of the intestine.

These observations are of further interest in connection with the growth of the host animals under the experimental conditions. It has been shown² that increase in body weight of the host animals occurred only when calcium and phosphorus were added to the salt-deficient basal diet either as a complete salt mixture or in simpler combinations. The conclusion seems obvious that the material in the intestine which represents the end products of digestion of the ration, and which is absorbed by the host on the one hand and becomes a medium for the nutrition of the intestinal bacteria on the other, will not suffice for either purpose if calcium and phosphorus in suitable amounts are absent. These observations reemphasize the necessity for calcium and phosphorus in the metabolism of living cells.

HEADED FOR THE LAST CENSUS?

Ever since the famous attempt by Malthus to prophesy the extent of future populations, numerous other opinions have been advanced on the subject. The complete failure of his early prediction to materialize is reflected in most of the recent studies, which deal with the question of probable underpopulation rather than the malthusian forecast of unrestricted increase. The true interpretation of population trends, however, has been somewhat concealed by the fact that in most countries the birth rate per thousand still exceeds by a moderate margin the death rate. As has been pointed out by a number of authorities, this increase in population is an illusion as far as its ultimate significance is concerned. The direct comparison between the birth rate and the death rate is a crude method and fails to take into account certain other factors the recognition of which necessitates an utterly different conclusion. The disparity is due partly to the exceptionally low death rate in most countries, which in its turn is largely the result of the extraordinary improvements in measures of preventive medicine and the more than "normal" proportion of young and early middle aged persons in the total population.

In a recent book³ discussing this subject as far as it concerns the British commonwealth of nations, it was pointed out that population may be affected by four

¹ Eppright, E. S., Valley, G. and Smith, A. H. *J. Biol. Chem.* 34: 51 (July) 1937.

² Eppright, E. S. and Smith, A. H. *J. Biol. Chem.* 34: 51 (July) 1937.
³ McCleary, G. F. *The Menace of Irish Dependence*. George Allen & Unwin Ltd. 1937.

principal factors fertility rates, mortality rates, and variations in immigration and emigration. For the purposes of considering population trends, however, the first two factors are the more important. As evidence of change in the first factor, McCleary cites the birth rate for England and Wales from 1841 to 1935. In the period from 1841 to 1850 the annual number of births per thousand of population was 32.6, this rose to 35.4 in the period from 1871 to 1880 but has since fallen with almost consistent regularity to 14.7 in 1935. This fall in birth rate has been accompanied by a fall in death rate, so that although the birth rate in 1935 was 14.7 the death rate had also fallen to 12.3, still leaving a favorable crude balance. Both rates, however, depend on the age constitution of the population and the proportion of females. The significance of such factors can be assigned by computing the expectation of life at different ages as derived from life tables. When this method is followed, the true death rate for England and Wales becomes 16.45 per thousand—well above the crude birth rate. But even this is not accurate, since the crude birth rate is higher than the true birth rate when the latter is computed on the percentage of women at child-bearing ages in the general population. The first step in the calculation of a true fertility rate is to determine the number of children borne annually by a thousand women from 15 to 16 years of age—the first year of the child-bearing period. A similar rate is then worked out for each of the other years of the child-bearing period, the total of which, divided by 1,000, gives the number of children that would, on the average, be borne by one woman living to the age of 50. Taking the rate at which children are being born at a given time and place, the gross reproduction rate is calculated by the number of girl babies that will on the average be borne by every woman who lives through the child-bearing period. If this rate is less than one, clearly the population must diminish. When calculated for England and Wales, the gross reproduction rate has been below unity since 1926, in 1933 it was 0.845.

Another method of calculation has been described by Lorimer, Osborne and Carr-Saunders and cited by Burch.² If the total number of individuals in a stationary population are listed in five year age groups, each group is larger than the next older one and smaller than the next younger. This relationship has now changed for England and even for the United States in recent years, where there are more children from 5 to 9 years of age than there are from 0 to 4. This fact indicates an inability of the younger group to replace the older one, a course which if continued for a relatively short time, would obviously cause a decrease in the total population. Trends apparently similar to those in England and the United States have

been noted in almost all other countries, although in some of them the process is not as far advanced. In some, indeed, the trend is still so slightly evident that its actuality has been debated.³ Many important questions hang on the continuation of the trends now evident.

Dr Enid Charles, according to McCleary, has estimated the population of England and Wales from 1935 to 2035 on three different assumptions, all of which, however, agree in taking no account of immigration and emigration. The first estimate assumes that fertility and mortality for each year and age will remain constant at the 1933 level. On this assumption the population, which at the 1931 census was about 40,000,000, would rise to a maximum of roughly 41,000,000 in 1943 and fall to 36,000,000 by 1975 and to approximately 20,000,000 by 2035. The second estimate assumes that fertility and mortality would continue to fall as suggested by the experience of recent years. On the specific assumptions modifying this prophecy, the population would reach a maximum of 40,600,000 in 1940 and fall to 31,400,000 by 1975 and to 4,426,000 by 2035. In the third estimate it is assumed that mortality would continue to fall but that fertility would rise to the level of 1931 (about 10 per cent higher than 1933) and then remain constant. On these assumptions the population would reach nearly 44,000,000 in 1960 and decline to 43,000,000 in 1975 and to 33,600,000 by 2035. Similar figures, ignoring possible immigration or emigration, have been calculated for the United States, with the probably conservative estimate that our population should increase by about 25,000,000 during the next forty years.

Various conjectures have been suggested to explain these amazing changes in population trends. In some places the decline in the birth rate began at a time when the practice of contraception had received an enormous stimulus, but because of similar declines in countries in which contraception receives little application this view has not been generally accepted. According to Thomas,⁴ some would explain the phenomenon as the working of a natural law, fertility being an increment of the size or density of population, and the change in fertility resulting in the ebbs and flows of population. Such statistics as are available, however, fail to give ample support to this hypothesis. A definite conclusion has not been reached, but it seems probable that a variety of socio-economic factors may play a part.

Whatever the causes, the facts have been noted officially by several governmental pronouncements, which have in some instances attempted to establish measures aimed at reversing the trends. Thomas, for example, mentions the system of family allowances,

³ Cleland, Wendell. The Necessity of Restricting Population Growth in Egypt. *J. Egyptian M. A.* 20: 278 (July) 1937. Bentley, C. A. Population Movement and Birth Restriction. *ibid.* p. 288.

⁴ Thomas, E. W. Caryl. Population Problems. *J. State Med.* 45: 514 (Sept.) 1937.

² Burch, G. J. Headed for the Last Census? Part 1. *J. Hered.* 28: 203 (June) 1937.

apparently first started on a large scale in France, and the differential taxes on bachelors, with the spread of both measures to other countries. The aim, usually associated with propaganda, is to promote the cult of the large family. But although the curves of Germany's marriage and birth rates, for example, showed fluctuations at the time of the initiation of the marriage loans, the effect is apparently transient and the curves have continued along much the same lines as were in evidence before the promotion of the scheme.

If the present fertility rates continue in either the same direction or without further decrease, the populations in most countries will in a relatively few number of years show definite decreases in their total numbers. It is not at all certain, however, that this will occur, since at least some of the factors which determine the net changes seem to be entirely beyond human control or prophecy.

Current Comment

EXPERIMENTAL ARTERIAL HYPERTENSION

Many attempts have been made to produce arterial hypertension in laboratory animals by experimental injury to the kidney. Surgical removal of parts of the kidney, bilateral ligation of one or more branches of the renal artery, and local or intravenous injections of nephrotoxic or allergic substances have given inconstant or inconclusive results. Recently Goldblatt¹ described a technic which is an outgrowth of Farr's hypothesis that the essential factor producing persistent arterial hypertension in Bright's disease is reduced renal circulation secondary to renal sclerosis. Goldblatt and his co-workers devised a series of adjustable silver clamps to be placed around the main renal arteries by a retroperitoneal operation. By means of these clamps a permanent "moderate" (33⅓ per cent), "severe" (66⅔ per cent) or "very severe" (90 per cent) reduction in the venous output from each kidney could be produced in both dogs and monkeys. Dogs in which "very severe" bilateral renal ischemia was produced by this technic usually died in about three weeks with typical manifestations of uremic intoxication. With "moderate" or "severe" bilateral renal ischemia, however, both dogs and monkeys survived the operation. Within about six weeks a 100 per cent elevation in systolic blood pressure was noted in dogs, persisting with but slight changes for at least fifteen months. The only subnormal renal function observed was a decrease in "urea clearance" and the blood urea, non-protein nitrogen and creatine remained within normal limits. In monkeys (giant macaques) maximum hypertension was reached in about eight months. At this time one of the monkeys had a systolic blood pressure of more than 300 mm of mercury from a preoperative pressure of 130. The diastolic pressure in this monkey rose from a preoperative level of 90 to 220. Two

possible physiologic mechanisms have been suggested by these investigators: (1) neurologic reflexes from the ischemic kidney cause a generalized vasoconstriction or (2) unknown vasoconstrictor hormones (or other chemical products) are liberated or retained by the anemic kidney. If these hormones exist, however, they have not yet been identified.

ANTISEPTIC PROPERTIES OF HUMAN MILK

In an attempt to demonstrate "inhibins" and bacteria-transforming enzymes in milk, Dold and his co-workers¹ obtained both human and cow's milk in a practically sterile condition by combined antiseptic and aseptic techniques. To test for bacteriostatic properties, 5 cc of fresh milk was mixed with an equal volume of 3 per cent melted agar that had been previously cooled to 50 C. The resulting 50 per cent milk agar was poured into a petri dish and allowed to solidify. After solidifying, the milk-agar plate was inoculated with one loopful of a 1:2,000 to 1:4,000 dilution of a twenty-four hour broth culture of the test micro-organisms and the inoculum spread evenly over the surface by means of a glass spatula. The micro-organisms thus tested included the diphtheria bacillus, *Staphylococcus aureus*, streptococcus, *Bacillus coli*, *B. prodigiosus*, *B. pyocyaneus*, *B. anthracis* and an unidentified wild yeast. As controls, the same inoculation was made on heat-inactivated (100 C) 50 per cent milk-agar plates. A profuse (+++) or very profuse (++++) growth was usually noted on the heat-inactivated controls, with no demonstrable growth (—) or only slight growth (+) on the unheated milk-agar plates. Study of the thermostability of the growth inhibiting factor showed that the "inhibins" in cow's milk are not inactivated by heating at 80 C for seven minutes but are destroyed quantitatively by seven minutes' heating at 85 C. In human milk the "inhibins" are completely inactivated by heating at 56 C for thirty minutes. Human milk can be repeatedly frozen and thawed without reducing its "inhibin" titer. Human "inhibins," however, gradually deteriorate on standing, almost complete inactivation being noted after from twelve to twenty-four days' storage in the ice chest (5 C). In their study of the bacteriostatic factors in saliva, these workers had previously shown that saliva which does not completely suppress bacterial growth has the property of transforming virulent diphtheria bacilli into nonpathogenic strains. These transformed strains give subcultures apparently identical with stock strains of the pseudodiphtheria bacillus. Similar salivary transformations of toxic or virulent pneumococci, *B. anthracis* and *B. prodigiosus* have been reported by other investigators.² Practically identical transformations were demonstrated in fresh human milk. The bacteria transforming factors ("mutines") in milk are slightly more heat-resistant than the "inhibins." Thus far, however, no serious attempt has been made to identify the natural milk antiseptics.

¹ Goldblatt, Harry, Lanch, James, Hanzal, R. F. and Summerville, W. W. *J. Exper. Med.* 59: 347 (March) 1934. Goldblatt, Harry, Cross, Jerome and Hanzal, R. F. *ibid.* 65: 23 (Feb.) 1937. Goldblatt, Harry *ibid.* 65: 671 (May) 1937.

¹ Dold, H., Witzmann, F. and Kleiner, C. *Ztschr. f. Infektionskr.* 110: 525 (May) 1937.
² Allmendinger, W. *Inaugural Address, Tübingen* 1936.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company present the fifth series of network health programs beginning Oct 13, 1937, and running weekly through June 15, 1938. The programs will be presented over the Red network each Wednesday at 2 p m eastern standard time, 1 p m central standard time, 12 o'clock noon mountain standard time and 11 a m Pacific standard time.

The dates and topics of the broadcasts for the coming months are as follows:

Hygiene

- November 17—Fresh Air, Fresh Clothes and Fresh Skin ventilation, clothing, bathing
- November 24—Rest, Relaxation, Refreshment all work and no play, or all play and no rest—bad for health
- December 1—Tuberculosis, Foe of Youth how bad habits of hygiene and unwise living, plus infection, favor tuberculosis

Diet

- December 8—It Takes All Good Foods a well rounded diet and how to get it

The stations on the Red network are privileged to broadcast the program but, since it is a noncommercial program, they are not obligated to do so. Interest on the part of medical societies, women's auxiliaries and others may have weight with program directors of local stations. A personal visit to the program director might be advisable if the program is not being taken by a local station. This is an opportunity for the appropriate committees of county medical societies to indicate their interest in having this program broadcast in their community and to enlist the interest of other groups.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Personal—Among others, Drs Oscar J T Johnston, Batesville, Alexander C Kirby, Little Rock, and William R Brooksher, Fort Smith, have been appointed as members of an advisory council of the maternal and child health division of the state board of health.

District Meetings—The First Councilor District Medical Society held its meeting at Jonesboro, October 14, with the following speakers, among others: Drs John H McCurry, Cash, Congenital Malaria; and Jones H Lamb, Paragould, "Diagnosis and Treatment of Undulant Fever."—At a meeting of the Second District Medical Society at Batesville, October 11, Drs Melvin E McCaskill and Merlin J Kilbury, Little Rock, spoke, among others, on "Clinical and Microscopic Study of the Endometrium."—The Tenth Councilor District Medical Society was addressed at its all day session in Fort Smith, September 21, among others, by Dr Ray M Balveat Oklahoma City, on "The Therapeutic Value of the Intratracheal Use of Iodized Oil Combined with Eliminative Measures and Specific Desensitization in the Treatment of Intractable Asthma."—Dr Oscar J T Johnston Batesville, addressed the Fifth Councilor District Medical Society at Camden October 7, among others, on "Differential Diagnosis of Angina Pectoris and Coronary Occlusion."—Speakers before the Third Councilor District Medical Society at Brinkley October 6 included Dr Hugh R Raines, Memphis, on "Diagnosis and Treatment of Common Infections of the Urinary Tract."

CALIFORNIA

Society News—Dr Morris Fishbein, Editor THE JOURNAL, will address a special meeting of the San Francisco County Medical Society, November 30, on "The Social Aspects of Medical Care." A banquet will be held in his honor at the Palace Hotel. The society was addressed November 9 by

Drs Albert Lincoln Brown on "Acute Empyema as It Is Treated" and Paul M Aggeler and Salvatore P Lucia, "Studies of the Bleeding and Clotting Mechanisms of the Blood and Its Relation to Clinical Problems."—A symposium on pneumonia was presented before the Alameda County Medical Association, October 18, by Drs Gertrude Moore, Safford A Jelte, Fletcher B Taylor and James B Graesser, Oakland.

CONNECTICUT

Public Health Meeting—The annual meeting of the Connecticut Association of Public Health and Clinical Laboratories was held at Trinity College, Hartford, November 5. The program included the following speakers:

- Friend Lee Mickle, Sc D, director bureau of laboratories, state department of health, "The Evaluation Studies on Serodagnostic Tests for Syphilis."
- Dr Louise D Larimore, Greenwich Hospital, Greenwich, "Blood Chemistry in Relation to Acidosis."
- Dr Jesse G M Bullowa, clinical professor of medicine, New York University Medical College, New York, "The Laboratory in the Management of the Pneumonias" (1) Bacteriological and Clinical (2) Chemical.
- Dr William Thalheimer, New York Convalescent Serum, "Its Uses and Availability."
- Miss Ida Epstein, Hall Wilson Laboratory, Hartford Hospital, "The Degree of Acidosis as Determined by Plasma CO Combining Power and Other Laboratory Tests."

ILLINOIS

Personal—Dr Joseph A Campbell, managing officer of the East Moline State Hospital, has been appointed acting head of the Anna State Hospital, pending the appointment of a successor to the late Dr Ralph A Goodner.—Dr Charles H Starkel, Belleville, was honored October 25, when a fifty year Masonic membership jewel was presented to him by the Grand Lodge of Illinois. He has practiced in Belleville fifty-three years.

Southern Illinois Meeting—The sixty-third annual meeting of the Southern Illinois Medical Association was held in Pinckneyville, November 9. The speakers included:

- Dr Roland M Klemme, St Louis, "Management of Head Injuries."
- Dr Marion L Klinefelter, St Louis, "Early Treatment of Fractures."
- Dr Walter C Alvarez, Rochester, Minn, "Useful Hints in the Treatment of Indigestion."
- Dr Quitman U Newell, St Louis, "Treatment of Prolapsus Uteri."
- Dr Leon Bromberg, St Louis, "Present Status of Artificial Heart Therapy."
- Dr William H Olmsted, St Louis, "Protamine Insulin."
- Dr Frederick V Emmert, St Louis, "Analgesia in Obstetrics."
- Dr Albert B McQuillan, East St Louis, "Rarefying Conditions in Bone Disease."

Chicago

Gifts to Medical Library—The library at the University of Illinois College of Medicine has recently received two additions to its collection. Dr William Allen Pusey, Past President, American Medical Association, presented a collection of some 1,500 selected books and an assortment of separates and reports in the field of dermatology, and Dr Arthur E Hertzler, Halstead, Kan, gave a collection of about 7,000 volumes and 8,000 separates, largely in the field of surgery and surgical pathology. Both collections are available to students and the medical profession.

Drs Davis and Koff Awarded Prize—Dr Morris Edward Davis, associate professor of obstetrics and gynecology, and Dr Arthur K Koff, formerly instructor of obstetrics and gynecology, Division of Biological Sciences, University of Chicago, were awarded the annual prize of \$100 by the Central Association of Obstetricians and Gynecologists for the most meritorious work done by its members. Their paper is entitled "The Experimental Production of Ovulation in the Human." Dr Davis won the Gold Medal Award for the best scientific exhibit at the annual session of the American Medical Association in 1935.

Lectures of Institute of Medicine—Dr Alfred H Washburn, director, Child Research Council, University of Colorado, Denver, will deliver a lecture under the Elizabeth McCormick Child Research Grant of the Institute of Medicine of Chicago at a joint meeting of the institute and the Chicago Pediatric Society, November 16, at the Palmer House, his subject will be "The Place of Child Research in Medicine. Some Contributions to Medical Thought Suggested by a Study of the Growth and Development of the Individual Child." Dr James B Herrick, professor emeritus of medicine, Rush Medical College, will deliver a public lecture under the auspices of the institute at Thorne Hall, Northwestern University, November 19, on "How Knowledge of the Heart and Its Diseases Has Developed."

Society News—The Chicago Medical Society devoted its meeting November 3 to a discussion on "Recent Developments in the Treatment of Dementia Praecox," the program was

presented by Dr Charles F Read of the Elgin State Hospital and his associates and Dr Major H Worthington of the Research and Educational Hospital and his associates, Dr Read showed a film on "Treatment of Dementia Praecox by Insulin Shock and Cardiazol" and Dr Abraham A Low, assistant director, psychiatric institute, University of Illinois College of Medicine, spoke on "Insulin and Metrazol Shock Treatment of Dementia Praecox and Other Functional Psychoses."—At a meeting of the Chicago Laryngological and Otological Society, November 1, Dr Morris A Glatt discussed "Regeneration of Mucous Membrane After Sinus Operations."—A symposium on sulfanilamide was presented before the Chicago North Shore Branch of the Chicago Medical Society, November 2 by Drs Bernard Fantus, John A Bigler, George S Livingstone and Russell D Herrold

INDIANA

Package Library Service—The extension division of Indiana University now is offering library service to the physicians of Indiana. According to the state medical journal, material has been collected and classified with a view to furnishing an easily accessible loan library service. There is no charge for the service except for the postage.

District Meetings—The Twelfth Councilor District Medical Society will hold its annual meeting at Fort Wayne, November 16. Speakers will include Drs Robert S Berghoff, Chicago, on "More Common Forms of Heart Disease", Everett D Plass, Iowa City, "Female Endocrinology—Practical and Therapeutic Considerations," and Dr Logan Clendenning, Kansas City, Mo.—Speakers before the meeting of the Seventh District Medical Society in Danville, November 3, included Drs Gerald F Kempf on "Sulfanilamide", George W Kohlstaedt "Medical Treatment of Gallbladder Disease," and William V Woods, "Common Foot Ailments and Their Treatment", all of Indianapolis. In the evening Dr Archibald L Hoyne, Chicago, spoke on "Polomyelitis."—The Thirteenth District Medical Society was addressed in Mishawaka, November 3, by Drs Alfred S Giordano, South Bend, on "Interpretation of Some of the Common Laboratory Tests as Applied in General Practice", Cleon A Nafe, Indianapolis, "Management of Acute Surgical Conditions of the Abdomen," and Robert W Wilkins, Fort Wayne, "Obstetrics." Drs Edmund D Clark, Indianapolis, president, state medical association, and Charles A Elliott, Chicago, addressed the evening session, the latter's subject was "Cardiac Handicaps."

IOWA

Rotating Intern Service in Polk County—The Polk County Medical Society by agreement with the Iowa Lutheran Hospital, Iowa Methodist Hospital, Mercy Hospital and Broadlawn Polk County Public Hospital (general, tuberculosis and contagious departments), all in Des Moines, is inaugurating a rotating general internship service beginning July 1, 1938, and extending into a two year internship July 1, 1939, according to the *Bulletin* of the Des Moines Academy of Medicine and the Polk County Medical Society. Applications will be received only from graduates of class A medical schools. Rotation of service will include exchange between the individual private institution, which the intern selects and the county hospital. It is planned to select four resident physicians for the year 1939 from the entire group of interns accepted in 1938. Each of the four hospitals will pay its interns \$25 a month and maintenance.

Changes in Health Officers—Dr Erwin C Sage, formerly of Eagle Grove, has been appointed medical director of the Des Moines County Health Unit, succeeding Dr Edwin H Place, who resigned to accept a similar position in Midland County, Mich. Dr Frank J Condon, Fort Dodge, has been appointed director of district health service number 2, which began operations on October 1 with headquarters in Centerville. The district comprises Clarke, Monroe, Decatur, Wayne and Appanoose counties. Dr Joseph H Kinnaman, director of the division of child health and education of the state department of health has been granted a year's leave of absence to take a course in special training at the Johns Hopkins School of Hygiene and Public Health, Baltimore. Dr Chester L Putnam, Holstein, has been appointed field director for the organization of district health service number 3, which is to comprise eight counties.

KENTUCKY

Society News—Drs Oscar O Miller and Joshua B Lukins addressed the Jefferson County Medical Society, Louisville, November 1 on "Silicosis and Postoperative Pulmonary Complications" respectively.—The Louisville Medical Chirurgical Society gave a dinner November 12 in honor of Dr

William E Gardner, Louisville, who was recently chosen president-elect of the Kentucky State Medical Association.—Dr George R Livermore, Memphis, Tenn., addressed the Daviess County Medical Society, Owensboro, September 28 on "Prostatic Resection with Two Methods for Treating the Bad Surgical Risk."

LOUISIANA

Society News—A symposium on cesarean section was presented before the Orleans Parish Medical Society, October 25 by members of the New Orleans Gynecological and Obstetrical Society, with one exception, Dr Ansel M Caine, who discussed anesthesia.

The Violet Hart Medal—Prof Reynaldo dos Santos, Lisbon, Portugal, will receive the Violet Hart Medal for the most notable contribution to the advance of vascular surgery, November 26, in New Orleans, where it will be conferred by the committee of award under the auspices of Tulane University. The Violet Hart Fund is a legacy established in honor of Dr Rudolph Matas, emeritus professor of general and clinical surgery, Tulane University of Louisiana School of Medicine. This is the second award of the medal. In January 1934 it was conferred on Dr Mont R Reid, Cincinnati, for his experimental work on the systemic effects of arteriovenous fistulas and his other studies on the peripheral circulation.

MARYLAND

Society News—The Baltimore City Medical Society was addressed October 8 by Drs Jaroslav Hulla on "General Anesthesia by General Practitioners in General Procedures," Harry G Jones, "The Value of Thyroid Medication in Lowered Basal Metabolic Rates Without Myxedema," and William H Pearce, "Recent Rarities in Domiciliary Practice." Among others, Dr William R Geraghty addressed the society, October 22, on "Encephalopathy from the Therapeutic Use of Lead and Opium Pills."

New Health District Opened—The new Southeastern Health District was formally opened, October 15, the third unit to be set up under the Baltimore City Health Department in its program of decentralization of health administration. The district includes all of the first, second and third wards and that portion of the twenty-sixth ward south of Federal Street. The headquarters are at 901 South Kenwood Avenue. Speakers at the dedication included Dr Huntington Williams, Baltimore, commissioner of health, David E Weglein, superintendent of public instruction, and Dr James H Mason Knox Jr, Baltimore, president of the Babies' Milk Fund Association.

MASSACHUSETTS

Personal—Dr Kallman M Davidson, Boston, was guest of honor at a dinner October 12 in recognition of his completion of fifty years in the practice of medicine.—Dr Henry Rolfe Du Puy, formerly of Annapolis, Md., has been named health director of Worcester County, succeeding the late Dr Bradford Massey.

Society News—A round table conference on "Use and Methods of Application of the High Frequency Currents" formed the program of the New England Physical Therapy Society at a meeting in Boston, October 27.—At a meeting of the Hampden District Medical Society in Springfield, October 26, Dr Roger I Lee, Boston, discussed "Coronary Thrombosis: A Clinical Entity That Differs in Practice from Textbook Description."

MICHIGAN

The Beaumont Lectures—Dr Herbert M Evans, professor of anatomy, Morris Herzstein professor of biology and director of the institute of experimental biology, University of California Medical School, San Francisco will deliver the Beaumont Foundation Lectures, under the auspices of the Wayne County Medical Society, Detroit, March 28-29, 1938. The general subject will be "Physiology of the Pituitary Gland."

Highland Park Annual Clinic—The twelfth annual clinic of the Highland Park Physicians Club will be held at the Highland Park General Hospital, December 1. The program will include the following speakers:

Dr Kellogg Speed, Chicago, "Fractures of the Spine"
Dr Claude F Dixon, Rochester, Minn., "Surgical Lesions of the Cranium"
Dr John E Dees, Baltimore, "Sulfanilamide in Gonococcal Infections"
Dr Abraham F Lash, Chicago, "Furber's Serum"
Dr Samuel Iglauer, Cincinnati, "Deep Infections of the Neck"
Dr Israel M Kabinowitch, Montreal, Que., "Diabetes Mellitus"

Society News—Dr Richard H Overholt, Poston, addressed the surgical section of the Wayne County Medical Society, October 25 on "Surgical Treatment of Primary Carcinoma of

the Lung"—J G Stevenson, chief compensation attorney of General Motors Corporation, addressed the Genesee County Medical Society October 27 on "The Doctor as a Witness"—The Muskegon County Medical Society was addressed in Muskegon October 22 by Drs Park S Bradshaw and Roy H Holmes, both of Muskegon, on "Respiratory Allergies in Children" and "Fifth and Sixth Venereal Disease" respectively

A Medical Supplement—The Detroit *Free Press* published a medical supplement September 26. On the cover appears an editorial tribute to "The Good Doctor" by Malcolm W Bingay and the special features include signed articles by Dr Thomas Parran, surgeon general, U S Public Health Service, Washington, D C, Dr Morris Fishbein, Editor THE JOURNAL, Chicago, Lawrence Salter, science writer of the *Free Press*, and James A Bechtel, executive secretary, Wayne County Medical Society. The articles discuss a wide range of subjects, including the functions of the glands, urology, pathology, varicose veins and anesthetics

Hospital Upheld in Osteopath Suit—The right of the board of managers of Hurley Hospital to refuse to allow osteopathic practitioners to practice in the hospital was upheld by Circuit Judge Paul V Gadola October 20. Judge Gadola dismissed the motion of L R and H H Kesten, Flint osteopaths, asking a court order allowing them to refer patients to and practice in the municipal institution. The court held that the board has the right to designate who may practice in the hospital as long as the designation is made by class and not against individuals. Ralph M Hueston, Hurley superintendent, testified that the American College of Surgeons and the American Medical Association would refuse to approve the institution if osteopaths were admitted to practice. Attorney Sherman Bean, counsel for the plaintiffs, was assisted by O L Smith of Detroit, representing the state osteopathic association. City Attorney Hymen Hoffman, defense counsel, was aided by Senator Earl W Munshaw, Grand Rapids, counsel for the Michigan State Medical Society

MISSOURI

Twenty-Fifth Anniversary of Library—The Jackson County Medical Society observed the twenty-fifth anniversary of the establishment of the library, November 9, in the auditorium of the Kansas City Municipal Hospital number 1. A feature of the program was the unveiling of a bronze memorial to Rosa M Hibbard, the first librarian of the society who has held the position during the entire twenty-five years. The principal address was delivered by Dr Morris Fishbein, Chicago, Editor of THE JOURNAL, on "The Doctor Makes Literature"

NEW JERSEY

Society News—Dr Zacharias Bercovitz, New York, addressed the Hudson County Medical Society, Jersey City, November 3, on "Diagnosis and Treatment of Ulcerative Colitis," and Dr William G Herrman, Asbury Park, president of the Medical Society of New Jersey, spoke on state activities. Dr Thomas M Kain, Camden, November 2, on Serum in the Treatment of Pneumonia. Dr Hobart A Reimann, Philadelphia, discussed the paper

NEW YORK

Health Department Promotions—Dr Vivian A Van Volkenburgh, health officer of the Ithaca district of the state department of health, has been made assistant state commissioner for local health administration. Dr Ernest L Stebbins, who is in charge of the Rochester district, has been promoted to be director of communicable diseases

Illegal Practitioners Sentenced—The New York State Board of Medical Examiners has recently reported the following convictions of illegal practitioners

George W Schmanke, Rochester, six months in jail and a fine of \$100, jail sentence suspended

William S Dickert, Lockport, one year in jail and a fine of \$500, jail sentence suspended

Frederick T Dennis, Rochester, thirty days in jail and a fine of \$500, the fine suspended on condition that he discontinue his illegal practices

Louis Puff, Lockport, six months in jail and a fine of \$100, both suspended

Thomas Vaughn, Buffalo, one year in jail and a fine of \$500, jail sentence suspended

Prize for Pneumonia Case Reports—A prize of \$100 offered by the advisory committee of the New York State Department of Health for the best report of a series of cases of pneumonia has been awarded to Dr Walter J Karwowski, an intern at the Charles S Wilson Memorial Hospital, Johnson City. The contest was open to all physicians in the state

outside New York City and to interns. Emphasis was placed on the writer's objectivity and his originality and independence in the interpretation of the clinical features. The extent to which new methods of diagnosis and treatment were employed were also taken into consideration. Dr Karwowski graduated from Syracuse University College of Medicine in 1936

Clinical Afternoon and Dinner—The Buffalo Academy of Medicine will present a "clinical afternoon" followed by a dinner at the Hotel Statler, Buffalo, November 17. The following speakers will address the clinical session

Dr Rudolf Schindler, Chicago, Diagnosis of Lesions of the Stomach by Gastroscopy

Dr Robert Louis Levy, New York, Drugs in the Treatment of Diseases of the Heart

Dr Irvin Abell, Louisville, Ky, President Elect of the American Medical Association, Responsibility of the Profession

Dr Richard B Cattell, Boston, Diagnosis and Management of Surgical Diseases of the Colon and Rectum

Dr Morris Fishbein, Chicago, Editor of THE JOURNAL, will be the speaker at the dinner in the evening, on "Social Security and the Physician"

Graduate Courses for County Societies—The committee on medical education of the Medical Society of the State of New York has arranged a course on "The Relationship of Specialties to General Medicine" for the Rockland County Medical Society, which is being given at the Summit Park Sanatorium, Pomona. The series is as follows

Dr Marion B Sulzberger, New York, dermatology, October 22

Dr Marvin F Jones, New York, otology, October 29

Dr Clarence G Bandler, New York, urology, November 5

Dr Ward J MacNeal, New York, the laboratory, November 12

Dr Duncan Macpherson, New York, rhinolaryngology, November 19

Dr Martin Cohen, New York, ophthalmology, November 26

A course on obstetrics was presented before the Cayuga County Medical Society, Auburn, with the following speakers

Dr Ward L Ekas, Rochester, Maternal Welfare, October 7

Dr Edward C Hughes, Syracuse, Toxemias of Pregnancy, October 14

Dr Ferdinand J Schoenck, Syracuse, Complications of Pregnancy

Heart Disease, Diabetes and Tuberculosis, October 21

Dr James K Quigley, Rochester, Delivery Room Problems, October 28

Dr Stuart B Blakely, Binghamton, Hemorrhagic States of Pregnancy, November 4

New York City

Second Harvey Lecture—Dr Einar Lundsgaard of the Institute of Medical Physiology, University of Copenhagen, Denmark, will deliver the second Harvey Society Lecture of the current series at the New York Academy of Medicine, November 18. His subject will be "The Pasteur-Meyerhof Reaction in Muscle Metabolism"

Academy Public Lectures—The second public lecture of the New York Academy of Medicine on the "Art and Romance of Medicine" will be presented November 24 by Dr Alfred E Cohn, on "The Meaning of Medical Research." Dr Harrison S Martland, Newark, N J, will give the third lecture, December 23, on "Dr Watson and Mr Sherlock Holmes"

Staff Appointments at Hospital for Joint Diseases—Six appointments to the house staff of the Hospital for Joint Diseases are available, according to an announcement. The positions are for two years' rotating service on the general service of the hospital. Three are to begin July 1, 1938 and three Jan 1, 1939. Applicants must register before December 15 for the examination which will be held December 27 at the hospital. Further information may be obtained from the director of the hospital, Madison Avenue and One Hundred and Twenty-Fourth Street

World's Fair Medical Director Appointed—Dr Joseph Hoguet has been appointed administrative assistant and medical director of the New York World's Fair of 1939. He will be in charge of executive and administrative work of the division of public health, medicine and sanitation and will be responsible for the health of members of the exposition staff and of visitors attending the fair. Dr Hoguet graduated from Columbia University College of Physicians and Surgeons in 1907 and was at one time assistant professor of clinical surgery at Cornell University Medical School

Friday Afternoon Lectures at the Academy—The twelfth annual series of Friday Afternoon Lectures of the New York Academy of Medicine will begin November 19. The lectures for November and December will be as follows

November 19, Dr Robert L Levy, Drugs in the Treatment of Heart Disease

November 26, Dr Irving H Pardee, Anterior Pituitary—Its Hormones Relative to Diagnosis and Therapy

December 3, Dr Franklin M Hanger Jr, Newer Laboratory Aids and Their Clinical Value

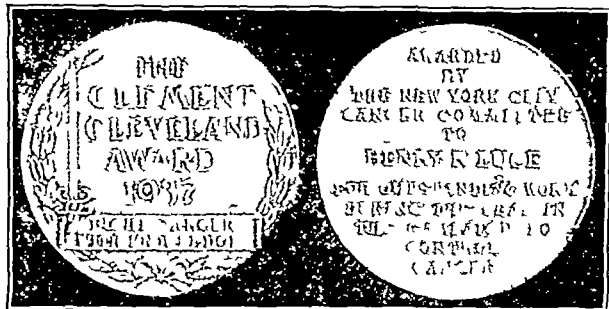
December 10, Dr Isidor S Ravidin, Philadelphia, The Problem of the Jaundiced Patient

December 17, Dr Eugene M Landis, Philadelphia, Recent Advances in the Diagnosis and Treatment of Peripheral Vascular Diseases

Society News—Dr Bradley L Coley addressed the New York Surgical Society, October 27, on "An Efficient Method for the Reduction and Immobilization of Colles' Fracture"

—At a meeting of the New York Endocrinological Society, October 27, the speakers were Drs Bernard Seligman on "Factors in Etiology and Treatment of Obesity", David Anchel, "Dwarfism", and Aaron S Blumgarten, "An Unusual Type of Pituitary Disorder"—Drs Eli Jefferson Browder and Harold Russell Meyers addressed the Medical Society of the County of Kings, October 19, on "A Consideration of Etiologic Factors and Diagnostic Procedures" and Surgical Excision of Epileptogenous Zones in the Brain" respectively—Drs Charles Edward Hamilton, Brooklyn, and Benjamin P Potter, Secaucus, N J, addressed the Brooklyn Thoracic Society, October 15, on "Some Interesting Pathological Conditions Found in the Mediastinum" and End Results of Collapse Therapy" respectively—Speakers before the Medical Society of the County of New York October 25 were Drs Charles Hendee Smith, on "Diagnosis and Prognosis of the More Common Congenital Cardiac Defects", Edwin P Maynard Jr, "Diagnosis and Treatment of Cardiovascular Syphilis", Lucy Du Bois Porter Sutton Management of Acute and Subacute Rheumatic Heart Disease" and Harold E B Pardee, "Diagnosis and Treatment of the More Common Cardiac Arrhythmias"

Publisher Awarded Cancer Medal—Henry R Luce, president of Time, Inc, producer of the "March of Time," was awarded the first Clement Cleveland Medal of the New York City Cancer Committee at a dinner at the Town Hall Club, October 27, "for outstanding work during the year in the campaign to control cancer" The presentation was made by Mrs Robert G Mead, daughter of Dr Cleveland and donor



of the medal Dr Cleveland, who died in 1934, was for many years surgical director of the Woman's Hospital and was one of the organizers of the American Society for the Control of Cancer, which developed from meetings held in his home The award of the medal to Mr Luce was in recognition of a special March of Time motion picture release "Conquering Cancer," featuring the campaign of public education on cancer control Dr Stanley P Reimann, Lankenau Hospital, Philadelphia, represented the American Society for the Control of Cancer Dr Francis Carter Wood and Mr Harford Powell were other speakers in addition to Mr Luce The dinner was held at this time to mark the observance of the eleventh annual Cancer Week proclaimed by Governor Lehman

NORTH CAROLINA

Dr McBrayer Resigns from Tuberculosis Association—Dr Louis B McBrayer, Southern Pines, has retired as managing director of the North Carolina Tuberculosis Association, a position he had held since 1915, when the association was founded Dr McBrayer resigned earlier this year as secretary of the Medical Society of the State of North Carolina Dr Romulus L Carlton, health officer of Winston-Salem, has been appointed managing director of the tuberculosis association He was graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1906

OHIO

The Hanna Lecture—Dr Corneille Heymans, professor of pharmacology, University of Ghent, Belgium, will deliver the forty-second Hanna Lecture at the Institute of Pathology, Cleveland November 18 His subject will be "The Control of Vaso-motor Tone Blood Supply and Blood Pressure"

Hospital News—Dr David I Abramson, Brooklyn, has been appointed director of the department of cardiovascular research at the Jewish Hospital Cincinnati—A thirty-five

bed sanatorium for Tuscarawas County was opened October 1 with Dr William E Hudson as superintendent It is near New Philadelphia

Hospital Centennial—The centennial anniversary of the Cleveland City Hospital was observed at a dinner at the Hotel Cleveland, October 18, attended by several hundred citizens Dr Arthur C Bachmeyer, Chicago, was the principal speaker at the dinner, and a short play picturing episodes in the growth of the hospital was presented

Gifts to the University of Cincinnati—The following gifts to the University of Cincinnati College of Medicine were recently announced

A bequest from the late Dr Augustus Rivaoli \$4,250
B H Kroger \$1,200 to provide an assistant resident in orthopedic surgery for the next two years
Parke Davis Company renewed grant of \$1,800
Union Central Life Insurance Company \$650 to establish a fund directed toward a study in the chemistry of heat stroke and heat exhaustion
William S Merrell Company two fellowships of \$600 each for graduate work in surgery

OREGON

State Medical Election—Dr Charles E Sears, Portland, was chosen president-elect of the Oregon State Medical Society, at its annual meeting in Salem, October 21-23 and Dr Charles T Sweeney, Medford, was installed as president The following were elected vice presidents Drs William W Brum, Salem, Richard B Adams, Portland, and Dean P Crowell, North Bend

PENNSYLVANIA

Society News—Dr Russell L Cecil, New York, addressed the Main Line Branch of the Montgomery County Medical Society, Haverford, at a special meeting November 8 on "Pneumonia with Special Reference to Its Specific Treatment"—Dr Edward J G Beardsley, Philadelphia, addressed the Westmoreland County Medical Society, Greensburg, November 2, on "Simplicity in Cardiovascular Diagnosis"—Drs John P Griffith and William Watt G MacLachlan, Pittsburgh, conducted the annual fall clinic of the Fayette County Medical Society, Uniontown October 21, at the Uniontown Hospital—Dr Llewellyn W Lord, Baltimore, addressed the Harrisburg Academy of Medicine, October 19, on "Eczema and Allied Dermatological Conditions"

Philadelphia

Ex-Residents' Dinner—The fifty-first annual dinner of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held at the Bellevue Stratford Hotel, December 7 Brig Gen Frank R Keefer, retired, Washington, D C, will be the guest of honor and Dr Alfred Stengel will preside Ex-residents who do not receive notices are asked to send their correct addresses to the secretary, Dr George Wilson, 133 South Thirty-Sixth Street, Philadelphia

Mr Donner Provides Funds for Study of Cancer—Mr William H Donner, who in 1932 endowed the International Cancer Research Foundation with a gift of \$2,000,000, has given to the University of Pennsylvania \$200,000 to establish a new radiologic department in the University Hospital for the study of malignant diseases, it was announced October 30 Mr Donner made the gift in memory of a son who died in 1931 A new building will be erected for the department, the New York Times reported

Society News—Dr Charles Macfie Campbell, Poston, addressed the College of Physicians of Philadelphia, November 3, on "Emotional Factors in Health and Disease"—Drs Fritz H Lewy and Douglas Macfarlan among others addressed the Philadelphia Laryngological Society, November 2, on "Testing Facial Nerve Paralysis" and "Standards Set for Audiometers—A Review of the Work Done by the Committees of the American Medical Association and the American Standards Association," respectively—Dr Franklin F Snyder, Baltimore, addressed the Obstetrical Society of Philadelphia November 4 on "Intra-Uterine Respiratory Movements of the Fetus and Their Relation to Respiratory Failure at Birth"

Pittsburgh

Society News—The Allegheny County Medical Society observed Pennsylvania Health Day November 5 with a meeting at the Mellon Institute Auditorium under the auspices of the society and the General Health Council The speakers were Dr Thurman B Rice Indianapolis, on "Fundamentals of Healthful Living" and Mr Leo A Griffith Pittsburgh on "Layman's Dilemma"—At a meeting of the Pittsburgh Ocular

cal and Gynecological Society October 11 the speakers were Drs Eugene A Conti, on "Placenta Accreta", Rosario Charles Nucci, "Melanoma of the Vulva," and Edward F Williams, Altoona, "Abdominal Pregnancy"—Dr George V Foster addressed the Pittsburgh Academy of Medicine October 26 on "Open Reduction and Fixation of Joint Fractures"

SOUTH CAROLINA

Founders' Day—Dr Irving S Cutter, dean and associate professor of medicine at Northwestern University Medical School, Chicago, delivered the address at the annual Founders' Day banquet at the Medical College of the State of South Carolina, Charleston, November 4. During the day the following program was presented

Dr James C McLeod Florence Traumatic Abdominal Surgery
Dr James Heyward Gibbs Columbia Cardiac Pain
Dr Joseph Decherd Guess Greenville Management of the Third Stage of Labor
Dr Frederick L Kredel Charleston Neurosurgical Diagnosis
Dr William H Kelley Charleston Treatment of Lobar Pneumonia

TENNESSEE

Personal—Dr Joseph C Tatum, Pulaski, has resigned as health officer of Giles County and Dr Wilfred N Sisk, assistant director of the health unit, has succeeded him

University News—The University of Tennessee College of Medicine, Memphis, has established three fellowships in radiology, with practical instruction to be offered at the John Gaston Hospital, which has new radiologic equipment and a supply of radium, it is reported in *Science*

Society News—Dr Rudolph H Kampmeier, Nashville, addressed the Davidson County Medical Society, Nashville, October 5, on "Lymphogranuloma Inguinale"—Speakers at a meeting of the Dyer, Lake and Crockett Counties Medical Society, October 6, were Drs Isaac G Duncan, Memphis, "Foreign Bodies in the Bladder" Ernest H Baird, Dyersburg, "Fractures of the Lower Extremity," and Edward G Campbell, Memphis, "Highlights in the Management of Infantile Paralysis"—At a meeting of the Hamilton County Medical Society, Chattanooga, October 14, Dr Hiram A Laws Jr discussed cholecystectomy and Dr Thomas Lyles Davis tracheobronchitis—Among speakers at a meeting of the Hardin, Lawrence, Lewis, Perry and Wayne Counties Medical Society in Waynesboro, September 28, were Drs William K W Sullivan, Jackson, on "Common Errors in the Diagnosis and Treatment of Routine Pediatric Disorders" and William E Boyce, Flatwoods, "Water Balance of the Body"—Drs John L Jelks, Memphis, and Julian H Adler, Western State Hospital, addressed the Memphis and Shelby County Medical Society, September 7, on "Two Unclassified Forms of Colitis" and "The Hypoglycemic Treatment of Dementia Praecox," respectively

TEXAS

Society News—Drs Andrew B Rivers, Rochester, Minn., and Ben R Buford addressed the Dallas County Medical Society, November 11, on "A Study of 5,000 Cases of Indigestion" and "The Newer Treatment of Lobar Pneumonia" respectively—At the fall meeting of the Northwest Texas District Medical Association in Cisco September 14 the speakers included Drs Craig W Munter, Fort Worth, on "Treatment of Urinary Infections with Mandelic Acid", Walter Grady Reddick and Karl B King, Dallas, "Sulfanilamide," and Oliver B Kiel, Wichita Falls, "Iontophoresis with Mecholyl in Treatment of Rheumatism"

VIRGINIA

State Medical Election—Dr Alex F Robertson Jr, Staunton, was chosen president elect of the Medical Society of Virginia at the annual meeting in Roanoke October 12-14 and Dr George Franklin Simpson, Purcellville, was installed as president. The following were elected vice presidents: Drs William L Powell, Roanoke; Jesse M Shackelford, Martinsville; and Flavius O Plunkett, Lynchburg. Next year's meeting will be held in Danville

WEST VIRGINIA

Heart Association Meeting—The first midyear meeting of the West Virginia Heart Association will be held November 22 in Charleston. Dr James Edwin Wood Jr, associate professor of internal medicine, University of Virginia Department of Medicine Charlottesville, will be the guest speaker on "Rheumatic Fever and Rheumatic Heart Disease." Dr William C Stewart, Charleston, is president

GENERAL

Society News—Dr Howard C Naffziger, San Francisco, was named president-elect of the American College of Surgeons at the annual meeting in Chicago, October 25-29. Dr Frederic A Besley, Waukegan, Ill., assumed the presidency. Drs Vernon C David, Chicago, and Fraser B Gurd, Montreal, were elected vice presidents. Next year's congress will be held in New York.

Physician Impersonated by Impostor—It has been reported by the Wayne County Medical Society, Detroit, that a man is using the name of Dr Samuel F Haverstock, Detroit, in contacts with physicians. Dr Haverstock said in a statement to the society that about ten years ago he helped a man who posed as a physician. After the first episode, Dr Haverstock saw the man again and gave him a few dollars. He then disappeared. According to Dr Haverstock, the man, who at that time was about 50 years old, had a pleasing manner and a definite knowledge of medicine. Dr Haverstock has practiced continuously in Detroit since 1909.

Farmer-Swindler in Western States—The sheriff of Cascade County, Mont., reports that a man giving worthless checks for ophthalmic examinations and glasses has swindled several physicians recently in Montana and Minnesota. This procedure was described in *THE JOURNAL*, September 11, page 883. It was said that the man represented himself to be a farmer. His checks given to Montana physicians were marked "For 30 Leghorn hens." According to the latest report he has used the names W P Rogers, Chas Vaughn, J D Heflin, G C Walters and G C Emerson. A physician in Michigan, on seeing the recent notice in *THE JOURNAL*, reported that such a man had visited his office Oct 24, 1936, using the name W E Garner and asking to have glasses mailed to R F D No 2, Galesburg, Mich.

Annual Tuberculosis Seal Sale—The thirty-first annual sale of Christmas Seals sponsored by the National Tuberculosis Association and its constituent state associations will open Thanksgiving Day. This year's seal depicts a Colonial watchman ringing a bell, symbolizing guardianship of life and property. The national association announced in its annual report released October 23 that tuberculosis deaths increased in 1936 after ten years of steady decrease. Available figures indicate that 70,907 persons died of tuberculosis in this country in 1936, as compared with 69,471 in 1935. The death rate was 55.4 per hundred thousand as compared with 54.5 in 1935. The increase was attributed in the report to "cumulative effects of the depression."

Christmas Seals!



Buy and Use Them

Aero Medical Association—At the annual meeting of the Aero Medical Association of the United States at the Waldorf-Astoria, New York, October 1-3, Dr James C Cole, New Orleans, was elected president and Dr Herbert B Wright, Cleveland, first vice president. Among the speakers were the following:

Dr Louis F Bishop Jr, New York, "Is It Safe for the Heart Patient to Fly?"

Drs Ashton Graybiel, Boston, and Vladimir Missiuro, professor of hygiene, Warsaw, Poland, "Experimentally Induced Anoxemia in Cardiac Patients with Special Reference to Certain Hazards in Air Travel and to the Use of Anoxemia as a Cardiac Functional Test."

Ross A McFarland, Ph D, and David B Dill, Ph D, Boston, "Physiological and Psychological Effects of Low Oxygen on Normal Man."

Dr Harry G Armstrong, U S Army, Dayton, Ohio, and J W Heim, Ph D, of the Physiological Research Laboratory, U S Army Factors Influencing Altitude Tolerance During Short Exposures to Decreased Barometric Pressure.

Meeting of Obstetricians and Gynecologists—Dr Ralph A Reis, Chicago, was chosen president elect of the Central Association of Obstetricians and Gynecologists at the annual meeting in Dallas, Texas, October 14-17. Dr Robert D Mussey, Rochester, Minn., was installed as president, Dr William T Black, Memphis, Tenn., was elected vice president and Dr William F Mengert, Iowa City, secretary. Next year's meeting will be in Minneapolis. Dr Charles Macfie Campbell, Boston, was the guest speaker, giving an address on "Personal and Environmental Factors in Obstetrical and Gynecological Practice." Dr John A Kolmer, Philadelphia, was the guest of the Texas Association of Obstetricians and Gynecologists and addressed a joint banquet of the two organizations on "The Etiology, Diagnosis and Treatment of Septicemia with Special Reference to Sulfanilamide."

Fellowships by Research Foundation—Fellowships carrying an annual stipend of \$2,000 will be awarded each year at the annual meeting of the board of directors of the Finney-

Howell Research Foundation, the second Wednesday of March beginning in 1938, according to an announcement. The awards will be for one year with the possibility of renewal up to three years. When deemed necessary by the board, special grants of limited sums may be made to support the work carried on under a fellowship. Applications must be on file at the office of the secretary of the foundation, Dr. William A. Fisher, Medical and Chirurgical Faculty Building, 1211 Cathedral Street, Baltimore, on or before the first day of February. The Finney-Howell Research Foundation was created under the will of the late Dr. George Walker, Baltimore, to support "research work into the cause or causes and the treatment of cancer." The will directed that the surplus income from the assets of the foundation together with the principal sum should be expended within a period of ten years to support a number of fellowships in cancer research, each with an annual stipend of \$2,000 in such universities, laboratories or other institutions, wherever situated, as may be approved by the board of directors.

Southwestern Medical Meeting in Phoenix—The annual meeting and clinical conference of the Southwestern Medical Association will be held at the Hotel Westward Ho, Phoenix, November 18-20, under the presidency of Dr. Chester R. Swackhamer, Superior, Ariz. A group of speakers will present several addresses each in the general session and conduct clinics and round table discussions. They include:

Dr. Arthur Stendler, Iowa City, Fracture Deformities and Disabilities of the Forearm, The Scoliosis Problem.

Dr. William J. Mellinger, Santa Barbara, Calif., The Base of the Skull.
Chauncey D. Leake, Ph.D., San Francisco, Practical Clinical Applications of Recent Pharmacological Studies. Central Nervous System Depressant Drugs. Drugs Used for Diagnosis. Practical Pharmacology of Heart Drugs.

Charles M. Wheeler, Ph.D., San Francisco, Amebiasis. Unsuspected Tropical Diseases of the Southwest.

Dr. Elmer L. Seeringhaus, Madison, Wis., Physiological Relations Between Pituitary, Gonads and Sex Organs. Treatment of Disturbances in Menstrual Rhythm and Sterility. A Review of the Principles and Techniques of Endocrine Therapy.

Dr. Leo Eloesser, San Francisco, Treatment of Chronic Empyema. Stenosis of the Air Passages.

Dr. Cladys R. H. Dick, Evanston, Ill., Poliomyelitis. Scarlet Fever.
Dr. Arlie R. Barnes, Rochester, Minn., Coronary Sclerosis. Pulmonary Embolism.

In addition, Dr. Charles A. Bahn, New Orleans, will conduct round tables and clinics in ophthalmology, and with Dr. Mellinger will take part in a special meeting Friday morning for specialists in diseases of the eye, ear, nose and throat. Dr. Swackhamer will deliver his official address at the opening general assembly.

LATIN AMERICA

New Cancer Society—Announcement is made of the formation of the Cancer Society of Rosario, Argentina, for the study of cancer in all its aspects. Dr. Jose M. Cid is president and Dr. C. Sylvestre Begnis is secretary. A special committee has been appointed to organize a campaign against the disease with the following members: Drs. Juan Martinez Begnis, Manuel Gonzalez Loza and Raul Mayer.

Government Services

Miss Roche Resigns from Treasury Department

Miss Josephine Roche, Assistant Secretary of the Treasury in charge of the U. S. Public Health Service since Nov. 15, 1934, resigned November 1. According to the New York Times, Miss Roche found it necessary to devote some time to her coal business in Colorado. At the request of President Roosevelt, she will remain as a member of the Interdepartmental Committee for the Coordination of Health and Welfare Activities of the Federal Government of which she has been chairman since its creation by executive order a year ago. Miss Roche is the first woman to occupy the position of Assistant Secretary of the Treasury and the second woman to have attained subcabinet rank.

Changes in U. S. Public Health Service

The following have been appointed and commissioned to the positions indicated in the U. S. Public Health Service:

Dr. George L. Crist, passed assistant surgeon reserve corps for active duty, U. S. Marine Hospital, Galveston, Texas.
Dr. Robert C. Dunn, assistant surgeon reserve corps for active duty, U. S. Marine Hospital, Seattle.
Dr. Joseph G. Evans, as a assistant surgeon reserve corps for active duty, relief station, San Pedro, Calif.
Dr. Russell K. Taubert, assistant surgeon reserve corps for active duty, U. S. Marine Hospital, Mobile, Ala.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 16, 1937

The "Bottle Habit" Under the Insurance System

Addressing the National Association of Insurance Committees, Sir Kingsley Wood, minister of health, said that national health insurance had just attained its jubilee and was a successful and essential part of our social system. The number of insured persons now exceeded 18,000,000 and the benefits distributed since the beginning of the scheme were no less than \$3,000,000,000. He hoped to introduce a bill to make medical benefit available to young persons immediately after they left school and entered insurable employment, thus filling a gap which existed between the school medical service and that provided under the insurance act. He was still concerned with the number of bottles of medicine that were being prescribed to quench what might be described as a national medicinal thirst. In the last twelve months the number of prescriptions issued in England and Wales had increased from 43,800,000 to 66,000,000. Some part of the increase might be due to resort by insured persons to their physicians at an earlier stage of the illness, but the greater part was the result of the growth of the 'bottle habit'. It was not a satisfactory state of affairs, and how to deal with it was not easy to discover.

Medicine and Future Methods of Warfare

Science has profoundly altered not only the methods of warfare but also the medical problems arising from it. In a lecture on "Science and Future Warfare" Prof. J. B. S. Haldane, F.R.S., said that we heard about terrible new gases. It was possible that the list of poisonous volatile compounds was not exhausted, but he did not believe in the probability of anything much worse than mustard gas being produced. It was noteworthy that this gas was well known in 1886 and yet nothing worse was discovered between that date and its use in 1917 in the war. Recalling the measures taken when in 1915 the Germans first used gas against the British troops, he said that his father (the late Prof. J. S. Haldane, the physiologist) was sent to France. After he discovered that chlorine was being used he made experiments and devised within a week a primitive kind of respirator which kept out most of it. An air raid on London in which an enemy staked a big fraction of his air force might kill 50,000 people, but Professor Haldane did not believe that millions would be killed. Calculations about gas were often based on a ridiculous misconception. It had been pointed out that 10 tons of gas properly distributed would render the atmosphere poisonous over an area of several square miles. It was also true that one ton of bullets would kill the entire British army, if correctly aimed. It was not likely that a hostile force would be able to drop bombs exactly where it wished. Until recently he shared the view that incendiary bombs were likely to be most dangerous, but he had been amazed at the slight efficiency of incendiary bombs dropped on Madrid.

MICROBIC WARFARE

There was the boggy of microbial warfare—the use of disease as a weapon. Under one of those conventions which nations did not take seriously, bacteriological warfare was forbidden. But the convention was loosely drafted. Those diseases most likely to be of use in future warfare were not caused by bacteria but by ultramicroscopic viruses. Therefore any power which used this method could claim that it was within international law. He was doubtful whether any method of attack by disease germs would be anything like as effective as

high explosives It was possible that pneumonic plague might be disseminated by airplanes, but that process was more difficult than it sounded

FOOD SUPPLIES

With regard to food supplies in time of war, there were many possibilities of assistance from scientists There was a sporting chance that this country could be made to a large extent independent of food imports by some technic for producing sugar or starch from wood, which could already be done on a laboratory scale

A Socialist Medical Journal

The first issue of a medical journal called *Medicine Today and Tomorrow* which is the official organ of the Socialist Medical Association, has appeared Its policy is defined by the question which it poses "Does the British Medical Association speak for doctors?" It answers as follows "The British Medical Association says The existing health services do not represent a national health policy The basis of this should be the provision for every citizen of a general medical practitioner the family doctor whom no individual and no communal health service can replace *Medicine Today and Tomorrow* says The team and not the individual doctor must be the unit of the ideal medical service Cooperation must replace individualism Only when the health services are unified can every achievement of modern medical science be freely available to every member of the community"

The first article, by Mr Somerville Hastings (laryngologist), chairman of the Hospitals and Medical Services Committee of the London County Council, is devoted to "The Municipal Hospitals of London" He says that the labor party (now in power on the council) has been doing its best to induce the citizens to appreciate the fact that they are their own, that each one of them has every right to use them He mentions reforms introduced by the labor party, such as reduction of the nurses' hours of work from sixty-six hours (in some cases) to a maximum of fifty-four and making the treatment of tuberculosis entirely free He dilates on the features of the great hospital system of the council, which controls seventy-three hospitals, with 36,000 beds But these features were in existence before the labor party came into power, though the party naturally has made some improvements The journal advocates a state medical service for all An editorial entitled "Medicine and Peace" asks for the international cooperation of the medical profession in the cause of peace, with which all would agree But the article goes on to represent the precautions against air raids as illusory, which is by no means a foregone conclusion But in their avidity for antigovernment propaganda the socialists assume it, and the new journal simply repeats

"Delayed Action" Blindness Due to Gas Poisoning in the War

Some 2,000 war-blinded men are still at St Dunstan's, the institute founded for their care The cases of "delayed action" blindness, due to poison gas used in the war, have not yet ceased to occur The twenty-second annual report of St Dunstan's shows that fourteen new patients were admitted in the past year, blindness resulting from men having been gassed more than twenty years ago During the past five years nearly 200 such cases have occurred The scheme for providing talking books for the blind—phonograph records that will play on specially adapted machines for twenty-five minutes each side, thus enabling an average book to be recorded on ten double-sided 12 inch records—has now become definitely established

Sir John Thomson-Walker

Sir John Thomson-Walker, who was until his retirement six years ago the leading genito-urinary surgeon in this country, has died at the age of 67 years Educated at the University of Edinburgh, he graduated in 1894 after a distinguished career as a student He engaged in postgraduate study at Vienna and

Jena and was appointed surgeon to St Peter's Hospital for Stone and Urinary Diseases, London In the war he was surgeon to King George Hospital and to King Edward VII Hospital for Officers In 1919 he was appointed senior urologist and lecturer on urology at King's College Hospital, which was then undergoing reconstruction in a new home The urologic department was a new one and it therefore fell to him to organize it His reputation was worldwide, especially for the treatment of enlarged prostate An excellent operator, he standardized the technic for suprapubic prostatectomy and showed that under favorable conditions the mortality could be reduced to about 2 per cent He wrote extensively on urology not only in the journals but in the textbooks His book on "The Surgical Diseases and Injuries of the Genito-Urinary Organs" became the standard work on the subject He was an honorary member of the urologic societies of America, Austria, France, Germany, Hungary, Portugal and Spain He played a prominent part in the founding of the Urological Section of the Royal Society of Medicine

PARIS

(From Our Regular Correspondent)

Oct 16, 1937

International Congress on Hepatic Insufficiency

The meeting of the International Congress on Hepatic Insufficiency was held at Vichy, the health resort, September 16-18, under the presidency of Prof Maurice Loeper of Paris Many distinguished physicians from all parts of the world, including Dr Whipple of the United States, formed a part of the 1,600 members who attended the meeting Professor Glaessner of Vienna read a paper on functional tests of hepatic insufficiency He called attention to the fact that these were not accurate enough, as yet, to base a diagnosis on alone, without taking into consideration the clinical history Although there are many changes in the parenchyma of the liver which are accompanied by disturbances of function, there are often local changes without evidence of dysfunction In the major forms of hepatic insufficiency, functional tests are superfluous In most such cases the clinical observations suffice for diagnostic purposes, but in minor degrees of dysfunction, laboratory tests may be of value

Professor Castex of Buenos Aires sent a paper on pigmentary hepatic insufficiency In one form the canaliculi are involved, in the other only a functional disturbance exists The study of the urobilin and bilirubin in the two forms enables one form (canalicular lesions) to be distinguished from the other (dysfunction) Dr Urbach spoke on the relation of the liver to the skin Dysfunction is the direct cause of pruritus, urticaria, impetigo and eczema These dermatoses can in turn give rise to serious liver disturbances In such diseases as bronze diabetes, the skin and liver changes go hand in hand

Dr Parhon of Bucharest read a paper on the endocrine function of the liver For the present, the secretion of an antianemic hormone must be taken with reserve, though there are numerous relations between the liver and other endocrine glands during muscular activity and digestion Drs Debre, Gilbrun and Semelaigne reported their observations on hepatomegaly in children One type is of special interest in which there is an accumulation of reserve substances such as glycogen or fat in the liver parenchyma Growth is retarded and there is a disturbance of carbohydrate and lipid metabolism The urine contains ketones In general, the prognosis is a favorable one

Drs Lemaire and Vary of Paris spoke on edema due to hepatic dysfunction Biochemical studies made by them revealed the direct relation between such edemas and cellular changes in the liver as the result of some toxic factor

Drs Crandall, Ivy, Elton, Bassler and Goldstein of the United States presented a report on the relation of the liver

to nutrition. Hepatic dysfunction has an important part in the etiology of dysfunctions of the cerebrospinal and autonomic nervous systems by acting either directly or in a reflex manner. Altogether, abstracts of 130 papers were presented during the three day session.

Allowances for Large Families

The task of granting special allowances to heads and members of large families was placed in the hands of a special commission in 1916. This organization now has 222 offices in France and distributes allowances to 5,550,000 salaried workers and 1,920,000 families, according to a paper read by Bonvoisin of Paris at the International Congress for Protection of Infancy, held here in July. The total sum for allowances in 1937 will amount to more than two and a half million francs and will rise to four million when the organization has been perfected.

In discussing this paper, Schreiber of Paris criticized the indiscriminate allowances for large families and maintained that a strict medical control should exist in order not to encourage the raising of large families by parents whose mental and physical capacities are far from ideal. Examples have been cited in this connection of parents receiving allowances for large families but, instead of clothing and feeding the children properly, of spending the allowance for drink. In addition to direct allowances in the form of monthly recompense in money, the heads of large families are granted substantial reductions in railroad fares, and especially in the income tax. Since August 1935 all medical students who are members of families having three or more children have been entitled to a 50 per cent reduction in fees, except for laboratory work. The number of those who can benefit from such a reduction in annual medical school fees must not exceed 25 per cent of the enrollment at any school.

Professor Roussy Named Rector of University of Paris

For the first time in the history of the University of Paris or, as it is termed here officially, the Academie de Paris, a member of the medical profession has been called to serve as rector, a position corresponding to that of president in American universities. Prof. Gustave Roussy, on whom this honor has just been conferred, was appointed dean of the medical school here in 1933 and has taken an active part in the reform of the curriculum. The new rector was born in Switzerland of French parents and came to Paris to serve as an intern in the public hospitals here, following which four year service he was appointed head of the laboratory of physiologic pathology in the College de France and in 1925 professor of pathology in the medical school. His earlier contributions to medical literature were in the field of endocrinology, especially the interaction of various glands of internal secretion. Later he paid particular attention to the experimental production of cancer. Many Americans interested in this field have visited the laboratories and clinics at the Institut de cancer, just outside Paris, of which Professor Roussy has been the active head. His work in modernizing the teaching of pathology at the Paris Medical School has been favorably commented on by foreign visitors. Professor Roussy is the leader in the movement to secure more adequate quarters for the various laboratories. Reference has already been made in these letters to the vast series of buildings for this purpose now being constructed on a historic medical site, that of the Hopital de la Charite, not far from the lecture rooms of the final medical years. He is an honorary fellow of many American and European medical societies. The profession can have just cause to feel proud that such an illustrious representative as Professor Roussy has received such a well merited promotion to the position of rector of the University of Paris, in which there are more than 25,000 students.

A Chair of Medicosocial Aid at Paris Medical School

Professor Crouzon, head of one of the neurologic services at the famous Hopital Salpetriere, where Charcot taught, has just been appointed as the first occupant of the chair of medicosocial aid at the Paris Medical School. His reputation as a neurologist and research in the field of occupational diseases and industrial accidents make him eminently fitted to teach the subject of medicosocial aid as a part of the duty of modern medicine.

Hospital Ward Named in Honor of Dr. Chevalier Jackson

It is the custom in French public hospitals to designate the wards by the names of distinguished physicians and surgeons. In the past, this honor has been reserved for French members of the profession. At the suggestion of Dr. Le Mee, head of the Ear, Nose and Throat Service at the Children's Hospital here, a ward in this service is to be called the Chevalier Jackson ward as a recognition of the work of this internationally known specialist, who has just completed two courses for graduates in Dr. Le Mee's service.

A New Journal on Brucellosis

In accordance with a resolution voted at the recent meeting of the International Congress on Brucellosis, a journal entitled the *Archives internationale des brucelloses* will be published. Its aim will be to collect all material relating not only to brucellosis but to other diseases common to human beings and animals. The first number will appear in January 1938. Those desiring information should write to Dr. Josef Julien, Joyeuse, Ardeche, France.

Death of Dr. Henri Beclere

A few weeks ago an erroneous announcement appeared of the death of Dr. Antoine Beclere, the internationally known radiologist and head of that specialty here, who is very active at the age of 83 years. It now appears that the radiologist who died is Henri Beclere, a cousin of the older specialist, who has cooperated with Prof. Pierre Duval at one of the large public hospitals.

BERLIN

(From Our Regular Correspondent)

Sept. 20, 1937

Society for the Advancement of Science

The general meeting of the Kaiser-Wilhelm Gesellschaft for the Advancement of Science was mostly given over to the reading of noteworthy scientific papers by directors of the various institutes of the gesellschaft. The crux of this meeting was a paper by Professor Spatz, director of the Kaiser Wilhelm Institute for Brain Research at Berlin-Buch, on "The Trends of Research on the Brain at Various Epochs." After a historical review the author made especial mention of Gall, the nineteenth century German physician who was the first to seek a localization of psychic functions in specific portions of the brain. After Gall, Brocard and Wernicke were able to demonstrate unequivocally the close relation of certain cerebral regions to the function of speech. The work of Professor Spatz himself also tends toward similar conclusions. He attributes a special significance to certain metabolic conditions (presence of iron) and feels that certain cerebral fields are related to definite functions. He then took up the question of psychic functions and their relation to the brain. He cited the observations in this connection that, in obvious cerebral atrophy accompanied by certain pathologic processes in restricted areas of the frontal and temporal lobes, psychic manifestations of a peculiar nature (changes in personality, character and so on) will appear despite the fact that the regions affected had been previously termed "mute" to denote their lack of special function. Spatz designates certain basally situated areas of the brain the 'basal cortices' in view of their possibly crucial importance for the highest psychic functions.

A second and equally interesting lecture was that of Professor Kuhn, director of the Kaiser Wilhelm Institute of Biology in Berlin-Dahlem. His theme was "The Effect of the Hereditary Anlage." He explained how the chromosomes are divided transversely into a plurality of small segments from which the anlage develops. He then stated that if the chromosomes are submitted to roentgen irradiation they will to a certain extent tend to become divided and in this way the hereditary anlage can be arbitrarily altered and destroyed. Kuhn attributes to the cell plasma a special role in the cellular differentiation within the organism, which is directed by the genes. By roentgen mutations it was possible, experimentally, to create new races, usually of lower vitality, than the parent races. Exceptionally, however, the new race showed itself to have greater vitality than the original race. The experiments were performed with a species of the Lepidoptera, the meal-moth. If several mutations were produced by roentgen irradiation, it was frequently possible to compensate the depleted vital capacity thereby. Kuhn believes that he has determined that the gene gives off certain active substances into the blood and that these on their passage through the blood stream are capable of exerting a reaction in susceptible tissues. These so-called gene hormones have, according to Kuhn's investigations, an important part in the development of individual characters, and this fact the author considers of great significance for genetic research.

Incidence of Delayed Treatment of Cancer

Dr H. O. Kleine of the gynecologic clinic of Heidelberg University recently addressed the Heidelberg Medical Society on the incidence of delayed treatment of uterine cancer. He based his conclusions on a material of more than 800 cases observed in the course of the last twenty years. Of these, 684 were cases of carcinoma of the cervix, 128 cases of carcinoma of the corpus uteri. The total number of cases in which treatment was delayed amounted to 385 (56 per cent) of the cervical cancer cases and seventy-five (58.6 per cent) of the cases of carcinoma of the corpus uteri. It is necessary to differentiate cases in which the patient herself is responsible for the delay and cases in which the physician is at fault. Following the standard also in use at the Munich Woman's Hospital a patient is considered to have delayed the treatment of a cancer if she has allowed three months to elapse from the appearance of the initial symptoms until she first seeks medical advice. A physician is considered to have delayed treatment of a cancer if he has prescribed inadequate treatment for a patient for four weeks or more prior to the institution of special anticancer therapy. The proportion of cases in which the patient was guilty of neglect on this basis amounted in Kleine's material to 40 per cent of cervical cancer cases and 45.3 per cent of cases of carcinoma of the corpus uteri. The proportion of cases in which the physician is responsible for the delay amounted to 9 per cent of the cervical cancer cases and 13.3 per cent of the cases of carcinoma of the corpus uteri. Delay is especially dangerous in cancer of the cervix, as the cancer cells are capable of a speedy and extensive invasion of the parametrium and the carcinomatous process thus becomes inoperable.

The following figures for the years 1928 to 1934 illustrate the disastrous consequences of delay in cervical cancer cases. Of cervical cancers not neglected, 74 per cent were operable and 26 per cent inoperable, of neglected cervical cancers only 49 per cent were operable and the other 51 per cent were inoperable.

In 154 cases of cervical carcinoma the patient neglected the disease for six months or less subsequent to the initial manifestations, in 134 cases the corresponding period of delay varied between six months and two years. In forty-eight cervical cancer cases the physician allowed three months or less to elapse from the time of his initial examination of the patient

until the institution of proper therapy, in twenty-six cases this period was between three and eight months. For an improvement of such a state of affairs Kleine recommends among other measures legally compulsory examination of any woman who presents the initial symptoms of cancer, by a physician of her own choosing.

The Fight Against Lupus

Measures taken to combat lupus have frequently been reported in these letters (e. g., *THE JOURNAL*, Oct. 24, 1936, p. 1400, and Oct. 9, 1937, p. 1213). Recently the National Insurance Bureau in its capacity of supreme insurance authority has issued a report with regard to the disease. Certain data culled from the complete statement as published are of interest. In the year 1935 there was set aside in addition to the large appropriations for public health service a fund of 300,000 reichsmarks to be expended solely in the interest of those lupus patients who carry insufficient sickness insurance or who are uninsured. In the year 1937 an additional 200,000 marks was allocated for the same purpose. Already the 1935 appropriation has proved to be money well spent. It is of primary importance that lupus should be attacked as early as possible in its course. If this is done the disease can be quickly and inexpensively eradicated. Special hospitals for lupus patients have been found of particular worth in the campaign against the disease. The practitioner should not first undertake to treat lupus outside the hospital by some half measure that is apt to end in failure, the lupus patient should be admitted to one of the special hospitals as speedily as possible. If the foregoing step is taken the prognosis is favorable, especially if the patient is young. Hospitalization should above all not be delayed if the disease appears to be based on a focus of pulmonary or other centrally located tuberculosis. The same applies to cases characterized by tuberculosis of the mucosa, for in this condition lurks the menace of a diffuse dissemination and of a laryngeal or pulmonary involvement. All patients with lupus carcinoma should of course be hospitalized. Virtually all lupus patients should receive hospital care if they come from an environment contaminated with tuberculosis or if they are unable to obtain suitable nutrition at home. It is seen that all lupus patients who belong to the Sick Insurance receive adequate treatment.

ITALY

(From Our Regular Correspondent)

Oct. 15, 1937

Abdominal Wounds in War

Professor Ottorino Uffreduzzi, head of the Clinic of Surgery of the University of Turin, delivered a lecture to the physicians of the army in Turin. He said that at the beginning of the Great War surgeons made two mistakes in dealing with abdominal wounds. They did not give immediate surgical treatment as near to the firing line as possible, and they showed an optimism as to the prognosis based on statistical reports of the Anglo-Boer, Russo-Japanese, Italo-Turkish and Balkan wars. In these wars abstention from surgical intervention prevailed, and the wounds were caused by bullets less strong than those fired in the Great War, during which many wounds were caused by fragments of shells. As a result of these errors, many of the wounded died in the field. A few months after the beginning of the war the German statistics showed a mortality rate of 90 per cent from abdominal wounds, 70 per cent of the soldiers dying in the battle fields and 20 per cent in medical posts near by. Of the 10 per cent transported to medical posts, 2 per cent died of late complications. The German surgeons had a congress at Brussels in April 1915, during which Schmieden maintained the advisability of early surgical intervention by well equipped surgeons near the battle fields. In the Great War 4 per cent of all wounds were abdominal wounds. So-called Kuttner's wounds, which pierce the abdomen

without injuring the viscera were more frequent in the frontal than in the transverse axis, and they represented 54 per cent of abdominal wounds. In relation to all abdominal wounds the frequency for the intestine was 60.9 per cent, for the liver 16.1 per cent, for the stomach and the kidneys 7.3 per cent, for the mesentery and the vessels 5 per cent, for the spleen 2.7 per cent and for the pancreas 4 per cent. The treatment is surgical, and the best results are obtained from early surgical intervention. The possibilities for early intervention depend on the organization of the surgical services as well as on the condition of war. In mobile warfare it is advisable to transport the abdominally wounded immediately by airplane. This method of transportation was used in the Italo-Ethiopian war. Peritonitis, peritoneal abscess and intestinal occlusion due to scar adhesions are the most frequent late complications of abdominal wounds.

The Calcium Treatment of Eclampsia

Professor Miranda, in a lecture before the Medical Society of Naples, reported on the administration of calcium in the treatment of puerperal eclampsia. Bernardi, he said, showed that the blood of pregnant women undergoes changes of the physical and the chemical constants, with increased osmotic pressure, decreased electrical conductivity, increased viscosity, decreased calcemia and glycemia and an increased amount of potassium in the blood. Miranda used calcium in the treatment of 226 patients with puerperal eclampsia. In eighty-seven cases the treatment consisted of intravenous injections of calcium chloride. In the remaining 139 cases the calcium treatment was given in association with surgical intervention (cesarean section, forceps delivery, change of presentation of the head or embryotomy). The mortality rate was 13.46 per cent for the first group of patients and 18.55 for the second. The treatment gave the best results in women with preclampsic conditions. The mortality for this group was 4 per cent. Calcium therapy can be given in association with other symptomatic or complementary treatment or with surgical intervention. It gives better results than treatment with magnesium sulfate. Calcium depresses the nervous system, lowers the blood pressure and sends water from the tissues to the blood. Magnesium may be dangerous to respiration without controlling the grave symptoms of eclampsia.

NETHERLANDS

(From Our Regular Correspondent)

Sept. 4, 1937

Discussion of Vaccination

A meeting for the discussion of the vaccination problem was held at Utrecht under the auspices of the local medical society. Prof. J. M. Baart de la Faille spoke in favor of compulsory vaccination. He said that the temporary but prolonged suspension of the vaccination law of 1872 has given rise to a nationwide state of inadequate vaccination, especially among the young generations. The speaker advocates compulsory vaccination of infants between the ages of 6½ and 18 months. The children to be vaccinated should be selected by medical examination, religious scruples and conscientious objections should be respected. The medical profession ought to conduct a campaign for public instruction in the benefits of vaccination. The circumstances in which the procedure is contraindicated should also be described. If the public remains uninfluenced by this campaign the medical profession should seek remedial legislation.

W. Schummans-Stekhoven, physician and lawyer, defended the opposite thesis according to which any compulsory medical treatment which inflicts bodily injury should be rejected. Moreover, several risks inhere in vaccination especially for infants under 2 years of age and even after careful selection. In fine, this speaker believes that, if compulsory vaccination is reintroduced,

no penalties ought to be imposed on transgressors of the law, and the right of compensation for untoward sequelae of vaccination ought to be recognized.

Nutrition of the Unemployed of Utrecht

The communal council of Utrecht discussed the problem of nutrition among the unemployed. It was decided to appoint a committee of investigation, named to serve were Prof. J. M. Baart de la Faille, president of the Sanitary Commission and professor emeritus of the University of Utrecht, and in addition Messrs. L. K. Wolff, P. H. Van Der Larn and M. H. Tropp, assistant to Dr. M. A. Tellegen. A number of homes of employed workers, both insured and uninsured, will be visited for the acquisition of information on the food supply. Among the homes to be inspected will be those situated in communes that provide medical care and other benefits (notably free meals for children at school). It will thus be determined whether or not the food allowances for households having children of school age or older are adequate. The directors of labor and unemployment insurance organizations will be furnished a list of homes investigated. The committee will also investigate the nutritional condition of school children and determine which schools provide meals for the pupils and which do not. The reasons for failure of a school to feed its pupils will be sought. If this investigation establishes the existence of malnutrition, there will follow a more extensive survey and the aggregate of data will provide a basis for the comparative study of the individual family's resources.

Marriages

JOSEPH PALMER CAIN JR., Mullins, S. C., to Miss Eleanor Grace White of Lynn, Mass., in Marblehead, Mass., August 17.

J. WALTER TROXELL, Surg., Lieut. Commander, U. S. Navy, San Diego, Calif., to Miss Miriam Kalb of Monrovia, August 15.

EUGENE WILLARD GREEN, Paterson, N. J., to Miss Frances Leonora Monteith of Columbia, S. C., September 15.

EDWARD W. GROVE, Gainesville, Ga., to Miss Margaret Hazel Whelchel of Fresno, Calif., in Atlanta, August 31.

JOSEPH CHARLES ANDERSON, Ebensburg, Pa., to Miss Kathryn Amelia Cooley of Sea Girt, N. J., September 7.

MERRILL ODOM HINES, Chattanooga, Tenn., to Miss Margaret McLaurin Davis in New Orleans, August 24.

BYRN WILLIAMSON, Milton, Tenn., to Miss Katherine Baxter of Asheville, N. C., at Shelbyville, August 8.

WILLIAM ALEXANDER READ, Cleveland, to Miss Emily Haile Sanford of Newport News, Va., August 26.

THOMAS ADDISON MORGAN, Franklin, Va., to Miss Margaret Virginia Ellis of Ashland, September 4.

CHARLES LEWIS BITTINGER, Statesville, N. C., to Miss Lola Irene Harper of Shelby, July 21.

JOHN J. SHAW, East Orange, N. J., to Miss Jane Levy of Shreveport, La., September 9.

LEWIS THORNE, Baltimore, to Miss Helen Preston Ellis of Wellesley, Mass., August 21.

JOSEPH B. GREENE, to Miss Sarah Lyle Spencer, both of Asheville, N. C., in August.

LFE SHARP, Columbus, Ohio, to Miss Alice Holt of Birmingham, Ala., in September.

JOHN JOSEPH HANLON, Chicago, to Miss Maryne Mangan, in Evanston, Ill., August 31.

WILLIAM A. H. RFTTBERG, to Miss Esther Fredricka Rice, both of Denver, in July.

WINTHROP WETHERSEE JR., Boston, to Miss Carolyn Hall of Brookline, in September.

HAROLD A. VINSON, Denver, to Miss Dora Alice Owen of Oklahoma City, July 3.

HAL DAVIS, to Miss Frances Holman Willis, both of Knoxville, Va., August 28.

JAMES DEAN CREGER, St. Paul, Va., to Miss Margaret Long, August 9.

Deaths

Virgil Francis Dinsmore, Tifton, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1900, Bennett College of Eclectic Medicine and Surgery, Chicago, 1901, member of the Medical Association of Georgia, past president of the Tift County Medical Society, on the staff of the Coastal Plain Hospital, aged 61, died, August 24, of cardiorenal disease and arteriosclerosis

John Herschel Cary, Washington, Pa., Jefferson Medical College of Philadelphia, 1897, member of the Medical Society of the State of Pennsylvania, past president of the Washington County Medical Society, served during the World War, for many years court and jail physician, on the staff of the Washington Hospital, aged 63, died, August 18, of coronary thrombosis

Andrew Boak Alexander, Winnipeg, Manit., Canada, Manitoba Medical College, 1897, at one time assistant professor of clinical medicine (infectious diseases) at his alma mater, formerly medical superintendent of the Winnipeg Municipal Hospitals, aged 65, died, September 3, in the Winnipeg General Hospital, of malignant tumor of the acoustic nerve and of the bladder

Benjamin Jephthah Bill, Genoa City, Wis., Rush Medical College, Chicago, 1879, an Affiliate Fellow of the American Medical Association, an organizer of the Walworth County Medical Society and its first president, helped to organize his district medical society and served one year as president, aged 86, died, August 22, of carcinoma of the pylorus

Hugh F. Keating, New Haven, Conn., Yale University School of Medicine, New Haven 1908, formerly member and president of the board of education, served during the World War, clinical assistant in neurology at his alma mater, 1910-1922, and clinical instructor, 1922-1924, aged 58, died, August 6, of coronary occlusion and arteriosclerosis

Richard Dresser Small, Portland, Maine, Harvard University Medical School, Boston, 1898, member of the Maine Medical Association and the New England Surgical Society, fellow of the American College of Surgeons, formerly on the staff of the Maine General Hospital, aged 65, died, September 11, of carcinoma of the liver

Henry Prentiss Derry, Macon, Ga., University of Georgia Medical Department, Augusta, 1888, member of the Medical Association of Georgia, on the courtesy staff of the Oglethorpe Private Infirmary, served on the staffs of the Mount De Sales Academy and St. Stanislaus College, aged 74, died, August 30, of myocarditis

Harry B. Fralic, Orlando, Fla., Medico Chirurgical College of Philadelphia 1905, formerly connected with the department of Indian affairs, public health service and veterans administration, served during the World War, aged 56, died, August 11, in the Veterans Administration Facility, Bay Pines

Raymond Hansford Leu, New Martinsville, W. Va., University of Tennessee College of Medicine, Memphis, 1917, served during the World War, formerly secretary of the Tyler-Wetzel Counties Medical Society, on the staff of the Wetzel County Hospital, aged 43, died suddenly, August 9

William Edward Colgin, Waco, Texas, Loyola University School of Medicine, Chicago, 1929, member of the American Academy of Ophthalmology and Oto-Laryngology, on the staff of the Colgin Hospital and Clinic, aged 37, was accidentally electrocuted September 10

Everett Willoughby Gould, New York, Columbia University College of Physicians and Surgeons, New York 1899, served during the World War, on the staff of St. Luke's Hospital, trustee of Columbia University, aged 63, died, August 18, of coronary thrombosis

John William Black, Bryan, Texas, Southwestern University Medical College, Dallas, 1909, past president and secretary of the Brazos-Robertson Counties Medical Society, for several years health officer of Bryan, aged 51, died, August 27, of coronary occlusion

Charles F. Sexauer, Newcastle, Ind., Western Reserve University Medical Department, Cleveland, 1884, College of Physicians and Surgeons, Baltimore, 1894, on the staff of the Indiana Village for Epileptics, aged 78, died, August 1, of pericardial aneurysm

Martin C. Barber, Steilacoom, Wash., College of Physicians and Surgeons of Chicago, 1891, member of the Washing-

ton State Medical Association, aged 69, died in August at St. Joseph Hospital, Tacoma, of heart disease following a hernia operation

William Roswell Gillett, Cuero, Texas, University of Nashville (Tenn.) Medical Department, 1896, past president of the DeWitt County Medical Society, for many years president of the school board, on the staff of the Burns Hospital, aged 69, died, July 30

Mary Shepherd Danforth, Manchester, N. H., Woman's Medical College of Pennsylvania, Philadelphia, 1875, member of the New Hampshire Medical Society, aged 87, died, August 6, in the Lucy Hastings Hospital, of myocarditis and arteriosclerosis

William Judd Crookston, Harrisburg, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1904, served during the World War, aged 61, died, August 9, in the Mount Sinai Hospital, New York, following an operation for appendicitis

Bayard Taylor Crane, Rutland, Mass., Harvard University Medical School, Boston, 1901, member of the American Clinical and Climatological Association, medical director of the Central New England Sanatorium, aged 58, died suddenly, August 14

Thomas Jefferson Evans, Colorado Springs, Colo., Hahnemann Hospital College of San Francisco, 1900, medical director and owner of the Crestone Heights Sanitarium and Hospital, aged 66, died, August 4, in Auburn, Wash., of cardiac disease

Samuel Hopkins Spalding, Hingham, Mass., Boston University School of Medicine, 1884, formerly member of the school committee, aged 80, died, August 30, in the Massachusetts Memorial Hospitals, Boston, of arteriosclerotic heart disease

William Gilbert Cole, Cornelius, Ore., Jefferson Medical College of Philadelphia, 1893, formerly member of the state legislature, aged 73, died, August 3, in the Good Samaritan Hospital, Portland, of diabetes mellitus and gangrene of the foot

William Henry Greer, Sheffield, Ala., Chattanooga (Tenn.) Medical College 1900, fellow of the American College of Surgeons, on the staff of the Colbert County Hospital, aged 59, died, August 9, in St. Mary's Hospital, Rochester, Minn.

William Richard Clyburn, Camden, S. C., University of Maryland School of Medicine, Baltimore, 1890, member of the South Carolina Medical Association, on the staff of the Camden Hospital, aged 69, died, August 11, of coronary occlusion

Garret W. Davelaar, Milwaukee, Milwaukee Medical College, 1897, member of the State Medical Society of Wisconsin, formerly medical examiner for the Prudential Life Insurance Company, aged 61, died, August 18, of cardiorenal disease

Emma M. Meinhardt Easterday, McCook, Neb., Hahnemann Medical College and Hospital, Chicago, 1885, Cincinnati College of Medicine and Surgery, 1897, aged 75, died, August 9, of carcinoma of the breast with metastasis to the lungs

Edward H. Elmendorf, San Antonio, Texas, University of Texas School of Medicine, Galveston, 1899, member of the State Medical Association of Texas, formerly city health officer, aged 59, died, August 7, of arteritis obliterans

Owen W. Cochran, Boonville, Mo., Louisville (Ky.) Medical College, 1885, member of the Missouri State Medical Association, also a probate judge, aged 77, died suddenly, August 29, of acute myocarditis and enterocolitis

William Clemmons Fogerty, Worcester, Mass., Jefferson Medical College of Philadelphia, 1883, member of the Massachusetts Medical Society, aged 78, died, August 31, of carcinoma of the prostate and cerebral thrombosis

Albert Field, Springfield, Mass., Long Island College Hospital, Brooklyn, 1897, member of the Connecticut State Medical Society, aged 93, died, August 25, in a local hospital, of hypertrophy of the prostate and arteriosclerosis

Ephraim B. Chenoweth, Seymour, Ind., Medical College of Indiana, Indianapolis 1902, served during the World War, aged 56, died, August 24, in the Schneck Memorial Hospital, of diabetes mellitus and hyperthyroidism

Harley Ross Colver, Chicago, Rush Medical College, Chicago 1904, medical superintendent of the Carnegie-Illinois Steel Corporation Hospital, aged 63, died, August 22, of coronary thrombosis and arteriosclerosis

Ernest Franklin MacVane, Portland, Maine, University of Vermont College of Medicine, Burlington, 1907, member of the Maine Medical Association, aged 57, died suddenly, September 9, of coronary thrombosis

Emory J Drury, Fulton, N Y, University of Buffalo School of Medicine, 1879, for many years county coroner and formerly health officer of Fulton, aged 83, died, August 24, of chronic nephritis and myocarditis

Frank W Black \odot Ligonier, Ind, Bellevue Hospital Medical College, New York, 1897, aged 65, died suddenly, August 16, of heart disease, after completing a tonsillectomy at the Lakeside Hospital, Kendallville

Henry Rogers Bentley \odot Central Bridge, N Y, Albany (N Y) Medical College, 1898, past president of the Schoharie County Medical Society, aged 64, died, August 19, of angina pectoris and arteriosclerosis

William Simpson Groom, Conway, Iowa, College of Physicians and Surgeons, Keokuk, Iowa, 1882, member of the Iowa State Medical Society, aged 78, died, August 4, of carcinoma of the stomach

William Edgar Derry, Dover, N J, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1880, aged 81, died, August 4, of cerebral hemorrhage and arteriosclerosis

Herbert V Beardsley, Findlay, Ohio, Homeopathic Hospital College, Cleveland, 1883, formerly secretary of the school board, aged 78, died, August 19, of arteriosclerosis and bronchopneumonia

James Patterson MacFarlane \odot Indiana, Pa, Jefferson Medical College of Philadelphia, 1905, for many years bank president in Vintondale, aged 59, died, September 4, of coronary thrombosis

Frederick William Derby \odot Boston, Tufts College Medical School, Boston, 1906, formerly ophthalmologist to the city department of health, aged 62, died, September 4, of coronary thrombosis

Morris Whitfield Clouse, Kearny, N J, University and Bellevue Hospital Medical College, New York, 1899, aged 60, died, August 27, of carcinoma of the cervical glands with metastasis

Howard John Black, Hawthorne, Nev, University of Nebraska College of Medicine, Omaha, 1933, aged 33, died, July 25, in San Francisco, following an operation for brain tumor

Sydney J Baker \odot Richmond, Va, College of Physicians and Surgeons, Baltimore, 1890, for many years coroner for South Richmond, aged 73, died, August 7, of strangulated hernia

Charles Delamere Wall, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900, aged 60, died, August 10, in Manteno, Ill

Edward Cox Mann, San Diego, Calif, University of Buffalo School of Medicine, 1902, aged 62, died, August 5, in the Mercy Hospital, of coronary occlusion and arteriosclerosis

James Thomas Bell, Daisy, Tenn, Vanderbilt University School of Medicine, Nashville, 1890, member of the county school system, aged 86, died, August 29, of bronchopneumonia

Lemont Addison Gates, Bridger, Mont, College of Physicians and Surgeons, Keokuk, Iowa, 1898, aged 64, died, August 29, in St Vincent's Hospital, Billings, of lethargic encephalitis

Zemach Levin, Los Angeles, Julius-Maximilians-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1895, aged 67, died, July 28, of perforated duodenal ulcer

George Irwin Royce, Glendale, Calif, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1877, aged 86, died, July 25, of carcinoma of the pancreas

Fred Morgan Barney, Dolgeville, N Y, Albany (N Y) Medical College, 1888, veteran of the Spanish-American and World wars, aged 74, died, August 17, of angina pectoris

John Wallace Beardsley, Tecumseh Mich, Northwestern University Medical School, Chicago, 1906, aged 55, died, August 19, of supradiaphragmatic esophageal diverticulum

John Douglas Camerer, Glendale, Calif, Rush Medical College, Chicago 1880, also a pharmacist, aged 80, died, August 28, of chronic myocarditis and pulmonary edema

Alice Huff Crandall, San Diego Calif, Omaha Medical College 1884, Woman's Medical College Chicago, 1887, aged 74, died, August 17, of arteriosclerosis and pneumonia

George Henry Dobson, Santa Ana Calif, Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster 1891, aged 75, died, July 28

Harry T Dunbar, Washington D C, Cincinnati College of Medicine and Surgery, 1876, Civil War veteran, aged 93, died August 24, of bilateral pneumonia

Simon Bismark Casselman, Stult Ste Marie Ont., Canada, Queen's University Faculty of Medicine, Kingston, 1907, died, August 27, of coronary thrombosis

William R Fall, North Vernon, Ind, Medical College of Ohio, Cincinnati, 1879, Civil War veteran, bank president, aged 89, died, August 11, of arteriosclerosis

Martin Josef Fiala \odot Duluth, Minn, Western Reserve University School of Medicine, Cleveland, 1930, aged 36, died, August 10, at Rochester, of a brain tumor

John L Hutchins, Bicknell, Ind, Kentucky University Medical Department, Louisville, 1904, city health officer, aged 68, died, August 10, of Hodgkin's disease

Armin Greenhut \odot Dundalk, Md, Medizinische Fakultät der Universität Wien, Austria, 1923, aged 39, was found dead, August 6, of potassium cyanide poisoning

John F Busey, Frisco City, Ala, Medical College of Alabama, Mobile, 1894, aged 72, died, August 17, of carcinoma of the right axilla and cerebral hemorrhage

William Colladay Robinson, Philadelphia, Medical Surgical College of Philadelphia, 1903, aged 75, died, August 6, of prostatic carcinoma with metastasis

George B Hansel \odot Canton, Ohio, Jefferson Medical College of Philadelphia, 1906, aged 62, died, August 12, of cerebral hemorrhage and coronary thrombosis

Charles Sumner Boggs, Filley, Neb, University of Nebraska College of Medicine, Lincoln, 1884, aged 80, died, August 1, of cerebral hemorrhage

William Gillispie Attwood \odot Los Angeles, University Medical College of Kansas City, Mo, 1906, aged 58, died, July 14, of coronary thrombosis

Thomas W Curry, Southport, Ind, Medical College of Indiana, Indianapolis, 1885, aged 91, died, August 22, of chronic myocarditis and arteriosclerosis

Caroline Connell Conn, Los Angeles, Chicago College of Medicine and Surgery, 1914, aged 68, died, July 2, of chronic myocarditis and appendectomy

Ulysses W Showalter, Clarksburg, W Va, Baltimore Medical College, 1892, for many years a member of the school board, aged 79, died, July 13

Delmar H Smith \odot Richmond, Kan, Kansas City (Mo) Medical College, 1896, aged 66, died, July 19, in the Ransom Memorial Hospital, Ottawa

Leander Orr Carruth, Tupelo, Miss, University of Tennessee Medical Department, Nashville, 1882, aged 80, died, August 29, of heart disease

Charles Hewitt, Wakefield, Kan, University of Maryland School of Medicine, Baltimore, 1868, aged 92, died, July 9, in Manhattan, of heart disease

Lindley Hoag Henley, Santa Cruz, Calif (licensed in Oklahoma under the Act of 1908), aged 80, died, July 23, of endarteritis obliterans

George W Shelton, Los Angeles, St Louis College of Physicians and Surgeons, 1883, aged 89, died, July 4, of carcinoma of the tongue

John J Moore, Brooklyn, Ont, Canada, Trinity Medical College, Toronto, Ont, 1891, aged 75, died, August 11, of coronary thrombosis

Max John Alexander \odot Pocomoke, Va, Medical College of Virginia, Richmond, 1910, aged 50, died, August 30, of coronary occlusion

Abbie Blodgett, Benicia, Calif, Physio-Medical College of Indiana, Indianapolis, 1897, aged 82, died, July 3, of chronic myocarditis

Marshall M McGehee, Clarkston, Ga, Southern Medical College, Atlanta, 1888, aged 80, died, July 27, of carcinoma of the stomach

Timothy L Conroy, Baltimore, College of Physicians and Surgeons, Baltimore, 1892, aged 72, died, August 30, of coronary thrombosis

Joseph Harry Welch, Bennington, Vt, University of Vermont College of Medicine, Burlington, 1919, aged 59, died, July 11

James Buchanan Powell, Nashville, Tenn, Vanderbilt University School of Medicine, Nashville, 1889, aged 89, died, July 24

Joseph McCrary, Bold Spring, Tenn (licensed in Tennessee in 1889) Confederate veteran, aged 93, died in July

Maurice William O Connell, San Francisco, Calif, Medical College San Francisco, 1899, aged 63, died, July 6

James S Hansberry, Waco, Tex, Medical College of Texas, 1905, aged 64, died August 27, of portal cirrhosis

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

White's Herb Tonic—John W. White trading as Dr. J. W. White and White's Herb Mfg. & Remedy Co., Bessemer, Ala. Composition: Essentially extracts of plant drugs, alcohol (under 1 per cent) and water. Fraudulently represented as a remedy for syphilis, rheumatism, pellagra, appendicitis, etc.—[N J 24642 April 1936]

Anti Caps—Arthur Petrie trading as Anti Caps Co., Oklahoma City. Composition: Petrolatum and wax with small amounts of menthol and wintergreen. For cancer, vaginal ulcers, etc. Not antiseptic as claimed. Fraudulent therapeutic claims.—[N J 24643 April 1936]

Phospho—Mobile Drug Co., Mobile, Ala. Composition: Essentially sodium phosphate, phosphoric acid and water. For rheumatism, stomach, liver and kidney disorders, etc. Fraudulent therapeutic claims.—[N J 24644 April 1936]

White Cross Quinine and Iron Tonic—John H. Cash trading as American Drug Co., Mobile, Ala. Composition: Quinine sulfate, epsom salt and an iron compound. For chills, fever, influenza, etc. Fraudulent therapeutic claims.—[N J 24645 April 1936]

McClellan's Orthosol—McClellan Products, Ltd., Los Angeles. Composition: Soap, water, tar acids and glycerin. For insect bites and stings, douches, etc. Not antiseptic. False and misleading therapeutic claims.—[N J 24654 April 1936]

Cheney's Compound Herbs—G. S. Cheney Co., Inc., Boston. Composition: Coarsely ground drugs including pipsissewa, cascara, yellow dock, dandelion, prickly ash, sassafras, sarsaparilla, red clover and gentian. Blood purifier, etc. Fraudulent therapeutic claims.—[N J 24655 April 1936]

Fellows' (Dr.) Headache Powders—Clark Medicine Co., Newburyport, Mass. Composition: Essentially acetanilid (about 2.8 grains per powder of average weight), caffeine (about 0.62 grain per powder of average weight), baking soda and ground plant material including ginger. Fraudulent therapeutic claims.—[N J 24657 April 1936]

Holbrook's India Koff Kure—Holbrook & Co., Lynn, Mass. Composition: A syrup containing plant extracts, alcohol (10.4 per cent by volume) and chloroform (108 minims per fluidounce). Fraudulent therapeutic claims.—[N J 24658 April 1936]

Femasept—Chemical Laboratories, Inc., Atlanta, Ga. Composition: Essentially starch, milk sugar, small amounts of Rochelle salt, common salt and not more than a trace of sodium dichlorosulfamid benzoate. For female disorders. Fraudulent therapeutic claims.—[N J 24659 April 1936]

Dia Bet—Dia Bet Laboratories, Detroit. Composition: Essentially water with small amounts of sodium benzoate and extracts of plant material including myrrillin. Fraudulently represented as a cure for diabetes when taken by mouth.—[N J 24660 April 1936]

Cozzins New Formula for Asthma—Cozzins Chemical Co., Brooklyn. Composition: Essentially saltpeter, plant material including stramonium leaves and mustard seed, flavored with anise. Fraudulent therapeutic claims.—[N J 24661 April 1936]

Elixir Amprin—W. Scott Hunt, Oxford, N. C. Composition: Essentially salicylic acid (20.6 grains per fluidounce), acetanilid (6.45 grains per fluidounce), alcohol (30.7 per cent), extracts of plant materials and water. For la grippe, nervousness, etc. Fraudulent therapeutic claims.—[N J 24662 April 1936]

Scott's Nose and Throat Drops—Scott Drug Co., Charlotte, N. C. Composition: Essentially a mineral oil containing menthol, eucalyptol and wintergreen and not more than a trace of ephedrine. For hay fever, catarrh, etc. Fraudulent therapeutic claims.—[N J 24663 April 1936]

Marleo Ointment—Marleo Chemical Co., New Ulm, Minn. Composition: Essentially red lead, lead carbonate and a small amount of volatile oils including turpentine and menthol incorporated in fat. For open wounds, blood poisoning, rheumatism, abscesses, etc. Fraudulent therapeutic claims.—[N J 24664 April 1936]

Antisepline—Hygienic Pharmaceutical Laboratories and Genius Pharmaceutical Laboratory, New Haven, Conn. Composition: Essentially alcohol, water and boric benzoic and salicylic acids with small amounts of witch hazel, thymol, eucalyptol and menthol. For rheumatism, dandruff, tonsillitis, etc. Fraudulent therapeutic claims.—[N J 24670 April 1936]

Tussamag—Robert M. Froehlich trading as Right O Products Co., New York. Composition: Essentially extracts of plant drugs including thyme, a saponin, glycerin, sugar, alcohol and water. For bronchial disorders, tuberculosis, etc. Fraudulent therapeutic claims.—[N J 24667 April 1936]

Kay's Ointment—Kraupner & Kraupner, Inc., Brooklyn. Composition: Essentially zinc and bismuth compounds and benzocaine in a mixture of petrolatum and wool fat. For leg ulcers, etc. Fraudulent therapeutic claims.—[N J 24668 April 1936]

Kay's Powder—Kraupner & Kraupner, Inc., Brooklyn. Composition: Sodium perborate. For leg ulcers, etc. Fraudulent therapeutic claims.—[N J 24668 April 1936]

Kay's Leg Oil—Kraupner & Kraupner, Inc., Brooklyn. Composition: Essentially cottonseed oil perfumed with lavender oil. For leg ulcers, etc. Fraudulent therapeutic claims.—[N J 24668 April 1936]

Sullivan's Indian Oil—Sullivan Oil Co., Manchester, N. H. Composition: Essentially mustard oil, wintergreen, oleoresin of red pepper, kerosene oil and a fatty oil. For catarrh, croup, asthma, influenza, etc. Fraudulent therapeutic claims.—[N J 24665 April 1936]

Genius Vaporine Ointment—Hygienic Pharmaceutical Laboratories and Genius Pharmaceutical Laboratory, New Haven, Conn. Composition: Essentially white petrolatum with volatile oils including eucalyptus and menthol. For tonsillitis, catarrh, inflammations, etc. Fraudulent therapeutic claims.—[N J 24670 April 1936]

Victory Vapor Balm—Hygienic Pharmaceutical Laboratories, New Haven, Conn. and V. V. B. Co., Denver, Colo. Composition: Essentially volatile oils including eucalyptus and cayaput (2.2 per cent) in a petrolatum and paraffin base. For catarrh, tonsillitis, asthma, etc. Fraudulent therapeutic claims.—[N J 24670 April 1936]

Thymoform—Chemical Industrial Co., Providence, R. I. Composition: Essentially water, formaldehyde, soap, glycerin and volatile oils including thymol and eucalyptol. Fraudulently represented as a disinfectant and deodorizer.—[N J 24672 April 1936]

Teenjore Ointment—George Lee, Chicago. Composition: Essentially ammoniated mercury, camphor and petrolatum. Fraudulently represented as a Famous Old Chinese Remedy for eczema, dandruff, ulcers, psoriasis, etc.—[N J 24677 April 1936]

Wilhelm's Salve—Dr. G. F. E. Wilhelm's Sons, Crafton (Pittsburgh), Pa. Composition: Essentially lead compounds such as lead oleate and oxide, camphor, an extract of woody material such as elm bark and fat. For catarrh, carbuncles, soft corns, running sores, etc. Fraudulent therapeutic claims.—[N J 24671 April 1936]

Ferro China De Ange's—Chemical Industrial Co., Providence, R. I. Composition: Essentially cinchona alkaloids, strychnine, iron and phosphorus compounds, sugar, aromatics, alcohol and water. For anemia, general debility, malaria, etc. Fraudulent therapeutic claims.—[N J 24672 April 1936]

Hall's Canker Medicine—S. A. Saxton, Salt Lake City. Composition: A zinc salt and boric acid. Fraudulent therapeutic claims.—[N J 24678 April 1936]

Carbosalve—Aid All Co., Newark, N. J. Composition: Essentially petrolatum with 0.33 per cent of carbolic acid. Fraudulently represented as an antiseptic healing salve for sores, wounds and infections.—[N J 24679 April 1936]

Gosewisch's Garlic Tablets—D. Gosewisch, Inc. and the Genuine Garlic Tablets Corp., New York. Composition: Essentially sugar, corn starch, milk sugar and vegetable tissue having a garlic-like odor. For high blood pressure, arthritis, asthma, kidney disorders, diphtheria, tuberculosis, etc. Fraudulent therapeutic claims.—[N J 24682 April 1936]

Unguentine—Aid All Co., Newark, N. J. Composition: Essentially petrolatum and paraffin with 2 per cent of carbolic acid. For ulcers, eczema, piles, etc. Fraudulent therapeutic claims.—[N J 24679 April 1936]

Capsicum Salve—Aid All Co., Newark, N. J. Composition: Essentially petrolatum with 3.4 per cent of wintergreen and oleoresin of red pepper. For rheumatism, lumbago, etc. Fraudulent therapeutic claims.—[N J 24679 April 1936]

V. M. (VegeMucene) Tablets—Bio Vegetin Products, Inc. and V. M. Products, Chicago. Composition: Essentially plant material including peanut hulls and seed coats, flax pods, stems and hulls, corn starch and mangelwurz material. Fraudulently represented as a treatment for stomach ulcers and inflammations, hemorrhages, etc.—[N J 24685 April 1936]

Blanchard's (Prof. Joseph) Eczema Lotion—Joseph Blanchard and Bauer & Black, Chicago. Composition: Mercuric chloride, a small amount of borax, gum, alcohol and water. For ulcers, piles, psoriasis, eczema, etc. Fraudulent therapeutic claims.—[N J 24684 April 1936]

Baker's Cough Syrup—Baker Extract Co., Springfield, Mass. Composition: Essentially extracts of plant drugs such as white pine, sassafras, wild cherry and tar with chloroform, alcohol, sugar and water. Fraudulent therapeutic claims.—[N J 24686 April 1936]

Ferond's Hair Grower and Tonic—Sherry, Inc., New York. Composition: Essentially petrolatum, salicylic acid and a balsam such as balsam of Peru. Fraudulent therapeutic claims.—[N J 24688 April 1936]

Correspondence

SIGNIFICANCE OF POSITIVE WASSERMANN TEST IN NEW-BORN INFANT

To the Editor —In THE JOURNAL, September 25, Dr Charles Walter Clark reported a case supposedly of third generation syphilis. I believe his data fairly well establish congenital (prenatal) syphilis of the mother. However, the diagnosis of syphilis in the infant seems to be based entirely on positive, apparently nonquantitative serologic reports which are not sufficient evidence for the diagnosis. It has been conclusively demonstrated that an infant born of a syphilitic Wassermann-positive mother may have positive serologic signs at birth which gradually disappear, the child being normal clinically and eventually negative serologically without treatment (Dunham, E. C. The Diagnosis of Congenital Syphilis in the New-Born, *Am J Dis Child* 43 317 [Feb.] 1932; Faber, H. K., and Black, W. C. Quantitative Wassermann Tests in Diagnosis of Congenital Syphilis, *ibid* 51 1257 [June] 1936).

The explanation for this lies in passive transplacental transfer of reagin from the blood of the mother to that of the fetus. The postpartum concentration of reagin in the infant's blood is sufficient to give a strongly positive reaction, the reagin content gradually falling off and eventually disappearing in those patients who are syphilis free. It cannot be too strongly emphasized that a positive cord or neonatal blood Wassermann or flocculation reaction is more of a reflection of the state of the maternal blood than of that of the infant (Fildes' law) and that a positive reaction does not necessarily signify syphilitic infection in the infant.

Successive quantitative tests determining the reagin titer of the infant's blood if revealing a rise (increased positivity), would have been, in the absence of clinical signs, a more reliable, if not the only reliable, means of establishing the diagnosis of syphilis in the infant. It is of interest to note that in the article by Faber and Black a case is presented (case 3) that might have been regarded as third generation syphilis had not quantitative tests for the reagin titer been carried out.

ELWIN L. HELLER, M.D.,
Allegheny General Hospital,
North Side, Pittsburgh

DIET AND NEPHRITIS

To the Editor —It seems unfortunate that the interesting experiments of Farr and Smadel on the influence of diet on rats suffering from experimentally produced nephritis should have been so emphasized in the editorial columns of THE JOURNAL (October 9, p. 1202) that the reader is given the impression that anything more than a very low protein diet may well prove disastrous for the human patient with nephritis. Aside from the possible differences between rats and men, the experiments as they stand if transferred to human patients, would lead to no such conclusion.

As the figures are quoted the diet lowest in protein, and on which the nephritic rats seemed to thrive consisted of salt mixture 4 per cent, protein 5 per cent, fat 27 per cent and carbohydrate 64 per cent plus adequate vitamins. For a man weighing 100 pounds (45 Kg.) one would have to give a diet of at least 3600 calories in order to supply the minimum nitrogen requirement. The arrangement quoted would be divided thus: protein 47.50 Gm., fat 108 Gm., carbohydrate 608 Gm.

Diet 2, which proved injurious to nephritic rats, if isocaloric and, divided as specified, would contain protein 18 per cent, fat 27 per cent and carbohydrate 51 per cent, or protein 155 Gm., fat 108 Gm. and carbohydrate 486 Gm.

Diet 3, which proved disastrous to nephritic rats, with protein 40 per cent, fat 27 per cent and carbohydrate 29 per cent, would

amount to protein 380 Gm., fat 108 Gm. and carbohydrate 275 Gm. Two pounds of roast beef contains this amount of protein.

Obviously not one of these diets is suitable for the human nephritic patient of 100 pounds weight. For the average sized man they would have to be increased by 50 per cent to be consistent. In view of the conception of nephritis as a debilitating disease with a special drain on the body proteins, as shown by Peters and his co-workers (*Arch Int Med* 37 153 [Feb.] 1926), McCann and Keutmann (*J Clin Investigation* 11 973 [Sept.] 1932), McLester (*THE JOURNAL*, July 16, 1932, p. 192) and others, the rational indication appears to involve a protein ration that is decidedly more than a normal minimal figure. My own experience has tended to confirm these considerations, and I believe that most other clinicians who have approached the problem from this standpoint have reached the same conclusion.

TASKER HOWARD, M.D., Brooklyn

CONTRAST BATHING FOR FEET

To the Editor —Dr Dudley J. Morton's article on the feet in THE JOURNAL, October 2, was of interest to me, particularly his description of contrast bathing.

For several years I relegated the buckets to the limbo of forgetfulness except in the occasional case in which running hot and cold water was not obtainable. The reasons for discarding the usual plan were as follows: 1. At times the size of the feet precluded simultaneous immersion in one bucket. 2. It was difficult to keep the water in the warm bucket warm and in the cold bucket cold.

The buckets were replaced by a hose attached to the common spigot of the bath tub by means of a water thief attachment. On the other end a sprinkler such as is used by barbers in rinsing the head after a shampoo was attached. The patient sat on the edge of the bath tub, adjusted the temperature of the water as to heat and sprayed the feet and legs for a period of a minute, then shut off the adjusted water and turned on the cold, spraying with this for a minute. The same number of times for each, five, that Dr. Morton suggests was used.

The results from this method have been much better than from the buckets: (1) because flowing water was used instead of static water, (2) the temperature could be kept at an even point and (3) the shock of the rapid change from warm to cold with a forced stream seemed to act much better than the immersion method in producing vascular reaction.

I have used this not only in the type of case referred to by Dr. Morton but also in circulatory disturbances and in subacute or chronic arthritis, in fact, whenever contrast baths have been indicated, this method has been used.

ARTHUR D. KURTZ, M.D., Philadelphia

CONSTITUTIONAL EFFECTS OF SALICYLIC ACID IN OINTMENT

To the Editor —A potentially interesting coincidence occurs in the October 2 issue of THE JOURNAL. On page 1142 there is a report by the Bureau of Investigation concerning a reducing compound, 'Pompay,' which is being distributed by some of the largest and best known department stores in the country. According to the analysis of the American Medical Association Chemical Laboratory the preparation is essentially 66 per cent salicylic acid in petrolatum. The directions for its use recommend that the entire body, including the face, be covered with the ointment and that it be left on for a length of time that would amount to more than an hour. A single jar of the stuff contains enough for seven applications.

On page 1160 of the same issue appears an abstract of a paper by G. Sannicandro in *Dermosiflografo* in which he

describes the case of a boy of 7 years who was treated by the application of 5 per cent salicylic acid ointment to psoriatic lesions on the trunk, knees and elbows. The boy died forty hours after the application of the ointment and it was determined that death was due to poisoning from the passage of the acid into the body. He points out the fact that the therapeutic dose of salicylic acid in adults varies with the individual, according to the presence or absence of a congenital or acquired sensitivity.

ROY E. REED, M.D., Fayetteville, N. Y.

Queries and Minor Notes

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ENDOCARDITIS

To the Editor—What is to be done in stubborn endocarditis? The cause of illness may be tooth infection of last summer and also overwork before final postgraduate examinations. The patient is a man aged 25. After an abscess and removal of the tooth it seemed to heal well in August. By the last of August the patient climbed some 1500 feet on Mount Ranier, came back the same day and felt fine. By mid-December overwork left him tired and weak, which only rest in bed would relieve. He relapsed and grew worse until almost a collapse February 10 with extreme nervousness and a systolic blowing murmur. The pulse was 108, the temperature was 100 and he was considered as having carried an elevation of temperature much longer than he knew. The metabolism then was —17 it had never been taken before. He improved soon when kept in bed but against advice in ten days he moved from the hospital and was somewhat upset again for several days. No spots at the capillary ends or enlargement of the spleen were noted. After twenty days in bed the temperature would usually go to 100 or 99 daily (morning, early, usually subnormal), the pulse getting down to about 90. During the next twenty days up to now the temperature would go to 99 or 99.1 once or twice daily on half of the days and a little less often the last ten days. The pulse began with 90 to 88 and is now usually from 78 to 82. About nine days ago he went five days without touching 99 twice and the pulse ranged between 78 and 84. The nervousness and restlessness had not all left him. By tests and thorough examinations all signs of tuberculosis were lacking. Five different cultures were grown to find an organism but all were negative; however they were grown for only five days. The test for undulant fever was negative. Some pain about the heart has dulled and is now there only part of the time. The patient sits up for meals and goes to the bathroom once a day. He has a good appetite and is in fairly good condition as he is taking A and D vitamin pills and hemoglobin aid once a day. Sleep is only fair. He is more worried now as improvement has seemed to be at a standstill the last few days. The early morning pulse seems very different from all others of the day; it is less full and at times either a hesitation or another beat is trying to appear. The blood pressure was 130/80 something but now is 126/78. As the young fellow is much discouraged an early answer will help immediately as I am not sure what to do next. Is there any use hunting again for an organism unless there is a serious relapse? Isn't five days short for the incubation period in a hunt for an organism? As nothing else seems to improve the condition is there any harm in trying prontosil or prontosil even if a streptococcus is not found though this is strongly suspected? If used, what is the dose and how is it managed? Where is it obtained? As there has been much nervousness and thrashing around of the arms and legs some evenings a few times I have used 1½ grains (0.1 Gm) of phenobarbital. Is there any harm from reaction or to blood developing mechanism? The mucous membranes of the mouth and gums have seemed too brightly red to me since I have seen the patient (twenty-eight days ago) but the doctor once seeing him and the dentist insist that they are normal. Only one culture was made from the mouth and was negative. The gums have retreated quite a little since January. Should a more and better search be made again in the mouth? Could beginning pyorrhea or undiscovered Vincent's angina cause the endocarditis? Or may it be that the endocarditis alone now is causing 0.5 degree of fever half the day? By now the mucous membrane and gums are improved slightly.

M.D. Washington

ANSWER—First it should be stated that all endocarditis is stubborn. There is no royal road to recovery and the one therapeutic measure that all authorities agree on is prolonged rest in bed.

Secondly, a diagnosis of endocarditis cannot be established on the information given. It may be strongly suspected but it cannot be proved and a search for other causes of long continued fever should be continued. To mention only a few of these causes, an infectious mononucleosis should be ruled out by means of the blood picture and the heterophile antigen test. The picture suggests an acute rheumatic fever. Are the nervous manifestations suggestive of chorea? Have rheumatic nodes been sought for? Have any structural changes taken

place in the heart since the onset? The search for hidden tuberculosis should be continued.

To answer the specific questions, the organisms may be found in the blood at any time but they are most easily found at the height of the fever during a relapse. They may be recovered from the culture in a few days. Frequently they are not found until after ten days of incubation and they have been recovered after more than twenty-one days, hence five days is too short a period of incubation. Several brands of sulfanilamide have been accepted for inclusion in New and Nonofficial Remedies. Prontylin is the Winthrop Chemical Company's proprietary name for sulfanilamide (para-aminobenzenesulfonamide). Prontylin has not been accepted, since the firm has not met the requirements of the Council. Pron-tosil is a trade name which has been used for several substances. In the United States it generally refers to an azo dye of the para-aminobenzenesulfonamide group which is given by injection and has been used alone and in combination with sulfanilamide in the treatment of certain streptococcal infections. Its chemical formula indicates the possibility of certain undesirable results but so far only mild toxic manifestations have been reported as the result of its careful use in cases in which overdosage and prolonged use have been avoided. The use of this material is still somewhat in the experimental state and the best results have been obtained from its use in hemolytic streptococcus infections. It seems unlikely that the present case is of such origin.

There can be no objection to the moderate use of phenobarbital.

As a general rule it is unwise to stir up local foci of infection during an acute exacerbation. Such manipulation unquestionably throws an additional load on the patient and not infrequently he is unable to cope with the reaction. Unless such a focus is actively causing trouble of itself, a conservative policy is to be preferred.

It would seem that the plan of rest plus symptomatic and supportive treatment should be carried on in this case. Any specific drug or other treatment should be held in abeyance until some definite reason can be found for the use of such agents. The patient should be persuaded that these chronic infections heal slowly and that several months now may not only save his life but also determine whether he shall be healthy or an invalid in the future.

ETIOLOGY AND TREATMENT OF ABORTION

To the Editor—1 Will not the intake of drastic cathartics, ergot and quinine and mustard foot baths induce an abortion in a woman three weeks past her expected period? 2 Would not the intake of large amounts of oxytocics and emmenagogues together with an associated laceration and erosion of the cervix predispose the uterus to infection? 3 Assuming that an instrument was introduced within a pregnant woman and infection took place, how soon or late would fever become manifest? 4 How would or should a doctor distinguish between a sapremic fever and the fever in the early stages of sepsis? 5 What are the other causes of a septic abortion besides the insertion of an instrument into the uterus? 6 Can a doctor truthfully state for how long a lacerated cervix has existed only by inspection? 7 In a pregnant woman complaining of an excessive and annoying leukorrhea would a doctor be justified in treating the cervical laceration and erosion? You can rest assured your answers will clarify many points.

L. ALEXIS SAGNELLA, M.D., West Haven, Conn.

ANSWER—1 The use of drastic cathartics, ergot, quinine and mustard foot baths will seldom induce an abortion at any time. If the reverse were true the abortionists would have very little business.

2 No.

3 Usually within three or four days but rarely later than ten days.

4 Ordinarily the term sapremia is limited to those infections in which only putrefactive organisms are present. Likewise the term sepsis or septicemia is usually used to mean the presence of bacteria in the blood stream. In sapremia the symptoms are due to the absorption of toxins from decomposing matter in the genital tract. If a piece of placenta or membrane is still attached to the uterine wall the patient will usually have uterine cramps which will persist until the secundines have been removed mechanically or more commonly expelled spontaneously or after the use of oxytocics. Usually the fever subsides after such tissue has been expelled. As long as secundines remain in the uterus the discharge is profuse and generally very bloody. Not infrequently there are repeated hemorrhages from the uterus or large blood clots are passed. The uterus is definitely enlarged, soft and tender. It is safer to determine this by rectal examination than by vaginal exploration. If a vaginal examination is made great gentleness must be exercised and of course aseptic and antiseptic precautions must be taken. Not infrequently a piece of tissue is seen pro-

truding through the external os. Occasionally such tissue blocks the cervix and produces leucorrhoea. When sepsis is suspected, a positive blood culture will clinch the diagnosis. In most cases the responsible organism is the streptococcus but other organisms may cause sepsis. These bacteria may gain access to the blood either through the blood vessels or through the lymphatics, and the symptoms that result may vary according to the route of the infection. Generally symptoms arise from one to three days after labor. Often the illness first manifests itself by a severe chill, high temperature and rapid pulse, and the patient rapidly gives evidence of being critically ill. The symptoms that appear are pallor due to anemia, severe headache, nausea, vomiting, persistent fever, infection of the puerperal wounds and signs of peritonitis.

5 The insertion of jellies, solutions, laminaria tents, and a large number of home-made instruments such as pencils, ice picks and umbrella ribs.

6 No.

7 It is first necessary to determine the cause of the discharge. If the latter is due to *Trichomonas vaginalis* or to *Monilia*, this discharge can generally be cleared up by treatment of the vagina alone. If the discharge is not due to a specific organism and appears to come from the cervix, the latter may be treated, but with great gentleness. It is best, however, to have the patient remove the leucorrhoea mechanically by using low-pressure vaginal douches of plain water or water containing sodium bicarbonate or table salt and defer treating the cervix until after delivery.

NEURODERMATITIS

To the Editor—A woman aged 22 has been suffering from an unbearable itching sensation of the skin for the last three years. It started while she was in training school and in a rather run down condition, with a series of boils some of which had to be incised. The itching areas involved only the forearms and the cubital fossae and the skin appeared normal. Gradually it spread over the upper half of the body. For the last three months the itch has extended to the lower extremities. She cannot sleep and passes whole nights scratching. The skin is dry and thick and shows lesions which most likely are secondary scratch effects and not a primary skin disease. The patient has been seen by a number of specialists and has been through most of the routine dermatologic treatments. Complete urine and blood examinations were entirely negative. Allergy tests did not reveal anything. The patient is of a nervous type with dysmenorrhea (irregularly cramping pains and virgo). She had frequent edema of the eyelids and face before the itch came on. She sneezes often without having any signs of a head cold. During the three years of sickness she has had one short interval when she felt perfectly normal. That was the time she quit training school for two months and lived at home. As soon as she returned to school the itch reappeared. She had to drop training completely and has had no itch free time since. Thank you very much for any suggestions you may be able to offer.

ERNEST FREUND M.D., Venice, Fla.

ANSWER—The description fits what is commonly called generalized neurodermatitis. While there is no doubt a large nervous factor, no effort should be spared to discover other factors, for they complicate many cases of this kind. The sudden recovery when the patient came home from training school suggests a contact dermatitis, although other features do not agree. This possibility, if not already worked out by patch tests, should be again investigated. The furunculosis preceding the pruritus suggests the possibility of a sensitization to pus organisms, but this should have been discovered by the tests already made. Frequent sneezing brings to mind the report of silk dermatitis not due to contact of silk with the skin but resulting from inhalation of silk dust when clothing of this material is worn. Patch tests were negative. Silk dust in the nose brought on the dermatitis. Other inhalants may be guilty (Figley, K. D., and Parkhurst, H. J. *Silk Sensitivity with Special Reference to its Role in Atopic Eczema*, *J. Allergy* 5: 60 [Nov.] 1933).

The dysmenorrhea brings up the possibility of an endocrine disturbance at the basis of the nervous condition. If not already tried without success, gonadotropic substance should be administered. Even though the endocrine factor is not an important one, relief of this distress will contribute to the comfort of the patient, lessen her nervousness and increase her resistance.

Continued watchful blood examinations at regular intervals are indicated as long as the dermatitis lasts, to discover a possible lymphoblastoma of which the itching is the only present sign. The external and internal lymph nodes should also be watched for signs of Hodgkin's disease. A biopsy of the skin in the most infiltrated part might suggest one of the lymphoblastomas before other signs appear, but the incipient dermatitis of these diseases seldom shows a typical histologic picture.

Liver function tests and an investigation of the bile tract may reveal an etiologic factor. Even though no lesion or

functional disturbance of the gastro intestinal tract can be discovered by tests, it is possible that intestinal conditions may be responsible, and it is justifiable to try colonic washings after simpler measures have failed.

Finally, a wise neurologist may discover a mental factor that can be treated.

Aside from treatment of the cause, the management should be in every possible way soothing. Colloid baths should be tried composed of three cupfuls of bran or oatmeal boiled in a gauze bag in two quarts of water to make a porridge. The bag and the water in which it has been boiled are then put into a half tubful of warm water and stirred about and squeezed gently. Less troublesome is the use of starch which can be put directly into the bath water. If it is desired to combine the alkaline bath with the colloid bath from 60 to 300 Gm of sodium bicarbonate or borax may be put into the bath water and well dissolved before adding the colloid material. The water should be kept at 98 F. and the body covered with water or with warm moist bath towels and drafts avoided. If well borne, such baths may be lengthened and repeated several times a day until continuous or almost so. On removal from the bath, the skin should be partly dried by dabbing and an ointment or oil applied with as little rubbing as possible. Olive oil, olive oil and glycerin, rose water ointment with or without 10 per cent boric acid, equal parts of rose water ointment and wool fat or other fat combinations should be tried to find the one most agreeable to the patient.

Phenol up to 1 per cent and menthol about 0.25 per cent act beneficially not only by direct soothing but also by giving the patient something to do instead of scratching. Sulfur and various tar preparations can be tried cautiously on a small area to test their safety and efficiency before using them extensively. Many neurodermatitis patients are more comfortable on pastes or powders than on greasy preparations in spite of the dryness of their skins.

General soothing can be aided by the use of bromides or one of the barbiturates. The fear of dermatitis medicamentosa need not hinder their use, for it is not very common. It should be watched for, as well as the undesired effects on the nervous system. Diathermy, gently used, has been known to exert a distinctly soothing effect. General ultraviolet exposures below the erythema dose have a soothing effect in many cases. Foreign protein treatment may be beneficial. Autoblood intramuscular injections or autoserum intramuscularly or intravenously are as mild as any. Milk injections may be tried. The possibility of sensitization must always be kept in mind, and these methods tried with great caution.

BENTONITE DUST

To the Editor—There are extensive deposits of bentonite in this locality. Many men are employed in the industry which requires work in the dust during the process of grinding and sacking in preparation for shipping. I have roentgenographed a number of the employees of the American Colloidal Company. I find evidence of deposits in the lungs, especially the lower lobes. Will there be any effect on the health of these men in later years? Some of the men have been employed in the industry for from five to ten years and seem to show no effects from inhaling the dust.

J. L. CHASSELL M.D., Belle Fourche, S.D.

ANSWER—Bentonite is a nonrefractory colloidal clay, probably formed from volcanic rock. It represents a mixture of silicates, and some specimens probably contain free silica although not necessarily in the form of quartz. Recently McCord and his associates (McCord, C. P., Fleming, R. L., Anslee, Harriet, and Johnston, Jan. *Surg., Gynec. & Obst.* 63: 129 [Aug.] 1936) published the results of a series of animal experiments in which divers minerals, including bentonite, were introduced into the abdominal cavity. Bentonite led to atypical results, not characteristic of any of the reactions described by Miller and Sayers. Certain dusts produce a proliferative response which is characteristic of silica, others an inert response typified by iron oxide and still others are absorbed as is true for calcite, for example. Bentonite yielded results described as "mixed." On appropriate microscopic examination a few characteristic proliferative lesions were established in the midst of a preponderance of inert reaction. On this account it is possible that bentonite may be more active than the ordinary silicates in bringing about changes in the lungs.

No dust taken into the lungs over long periods and in appreciable quantities is entirely innocuous, but apart from silica, which, as is stated above, is a constituent of bentonite, and asbestos the changes induced rarely exceed a state other than that termed "more fibrous than usual."

Since it appears that no great amount of investigative work has been directed to the properties of bentonite as a source of dusty lung disease in industrial workers it is desirable to hold in abeyance any final opinion pending further experience.

ANGIONEUROSIS WITH ACROPAESTHESIA

To the Editor—A man, aged 35, a dye worker for the past fifteen years came to me complaining of throbbing pains in the popliteal region and some pain in the left knee cap arch of the left foot and the left heel and of his second and third toes which fell asleep at times. Of late he has also felt some soreness of the adductor muscles of the left thigh. As a rule it is one of these complaints or another but they seldom occur simultaneously. His trouble began suddenly about seven years ago with pain in both feet which he experienced on arising one morning. Prior to this the patient had been taking salts to reduce weight and had had the grip at about the same time. He consulted a good orthopedic surgeon at this time the latter ordering arch supports after a series of x-ray examinations and consultations with another good physician. The roentgenograms according to the patient were entirely negative. For six months after wearing his arch supporters he was practically free from pain but became worse soon after this which necessitated removal of these supporters with the result that he felt better. A few months later, however, his trouble localized itself to the left knee and left heel. The right leg is entirely free from any discomfort at the present time. He has again tried arch supporters but the condition is aggravated. He has been to other physicians and no one can seem to do anything for him. Of late most of his trouble seems to be in the popliteal region although there seems to be some discomfort in the form of aching pains above the knee cap and heel. He cannot sleep unless his left leg is abducted and semi flexed. At times he feels the blood vessel behind his left knee throbbing and beating very fast but there is no pain as a rule at this time. These symptoms are intermittent worse and more frequent on lying or standing when the leg is extended. The past history is negative. The patient has always been perfect and still feels so except for his left leg. There is no history of gonorrhea or syphilis. As far as the physical examination is concerned, there is nothing very significant. The Kahn reaction and urinalysis are negative. Knee jerks and other reflexes are slightly hyperactive but equal. There are no areas of tenderness except when palpating deeply into the popliteal space. Thus far I have not been able to make out such a thing as popliteal aneurysm. Pulsation of the artery of the dorsum of the left foot is questionable. There are no areas of anesthesia or hyperesthesia. The patient perspires very easily. The blood pressure is 140 systolic 70 diastolic, the pulse rate 80 to the minute. Could this be solely a vascular condition? Could a neuromuscular condition cause this trouble? Do you think the patient's occupation has any relation to this condition? Diathermy has diminished the pain to some extent. Is this contraindicated?

EDWARD A. RICCI MD Providence R I

ANSWER—The lesions to be considered are vertebral arthritis, spinal cord tumor and lesions involving the second to the fifth lumbar and first to third sacral vertebrae. The entire pathologic syndrome could be on a vascular basis. There may be a neuromuscular lesion. This condition would be classified as angioneurosis with acroparesthesia. There may be embolism or thrombosis, bursitis in the popliteal region or varix. The patient's occupation undoubtedly has some relation as a predisposing factor. Static balance of the feet and legs is important. The urine should be examined for the presence of lead. Diathermy is contraindicated until a positive diagnosis can be made. Oblique x-ray projections should be made to visualize the intervertebral articular facets. Roentgenograms should be made to determine arteriosclerosis. The histamine test should be considered, and so should sodium iodide injection followed by fluoroscopy.

EFFECT OF HORMONES ON PITUITARY AND DIABETES MELLITUS

To the Editor—Please print any information about drugs and gland extracts that might have an inhibitory effect on the anterior pituitary hormone and also the course of diabetes mellitus.

G E LOWREY MD Harrodsburg Ky

ANSWER—That the anterior lobe of the pituitary is concerned with carbohydrate metabolism is definitely established but its role in human diabetes mellitus remains an open question. It is true that the diabetes in depancreatized animals is alleviated by removal of the pituitary gland but when an attempt is made to suppress the activity of the anterior lobe by other means and thereby alter the severity of the diabetic state either in the experimental animals or in human diabetes there are conflicting results. Barnes, Regan and Nelson (1933) were able to diminish the glycosuria in depancreatized dogs by injecting estrogenic substance and attributed their success to suppression of the pituitary gland. Nelson and Overholser (1934) confirmed their studies and found that the diabetic blood sugar in pancreatectomized rhesus monkeys was lowered after estrogenic substance was given. They concluded that the estrogenic substance depresses the diabetogenic hormone of the anterior pituitary, although it (estriol) was without effect in one instance.

Jones and MacGregor (*Lancet* 2 974 [Oct 24] 1936) were able to inhibit the gonadotropic principle of the anterior pituitary by giving large doses of estrogen to ten psychotic women past the menopause but found no consistent effect on the dextrose tolerance test. They concluded that inhibition of the anterior pituitary was not accompanied by inhibition of the diabetogenic principle.

Wilder and Wilbur, in their latest review (*Arch Int Med* 59 329 [Feb] 1937) of recent contributions to diseases of metabolism and nutrition state that Mazer, Meranze and Israel and Houssay have observed alleviation of symptoms of diabetes mellitus in some instances after injections of estrogen but that Collens and his associates could not confirm this. Wilder discusses in detail Himsworth's observations on patients with diabetes mellitus placed on diets high in carbohydrate and notes the suggestion that diets rich in carbohydrate lower the activity of the hypophysis.

There is no adequate evidence that the administration of any substance known to be capable of depressing at least one function of the pituitary has any favorable effect on human diabetes mellitus.

CONGENITAL DISLOCATION OF HIP

To the Editor—I have under my observation an infant of 4 months in whom I suspect but am not certain of the diagnosis of congenital dislocation of the hip. Because a cousin of the infant has a congenital dislocation the parents have been on the alert for any similar symptoms in their child and first noticed that there is a marked crease on the medial side of the thigh. I cannot see that there is any difference in the gluteal creases posteriorly or any difference in palpation of the femur nor is there any difference in the use of the two thighs. In the x-ray plate one could not say that the suspected side was definitely higher than the other side but perhaps it is a trifle. The only definite thing is this marked crease on the medial side of the thigh together with a family history for it. Is it not quite possible that the child might have a dislocation and that any obvious displacement might not manifest itself until the child commenced bearing weight on the leg? Could this be true to such an extent that the x-ray plate at this age might not show any real displacement? What other signs should be looked for in an infant that does not walk which would help to clarify the diagnosis? At what age should treatment be started? What is the correct treatment?

MD, North Dakota

ANSWER—It is quite possible that the patient may have a congenital dislocation of the hip. Early diagnosis of congenital dislocation of the hip can be made. (1) The leg on the side of the dislocation may not be moved so freely as the other, (2) there may be moderate resistance on attempting complete extension, (3) the inguinal and also the gluteal folds of the affected hip may be higher than those of the other side, (4) when the thigh is flexed to right angles with the body abduction may be resisted on the affected side, (5) if the condition is bilateral there may be widening of the perineum. A roentgenologic examination will show a poorly developed acetabulum, but in the young infant there will not be definite displacement of the femoral head. The epiphysal center of the head may be irregularly ovoid, while the ossification center of the normal epiphysis is round. These changes are so slight that the roentgenologist may be unwilling to consider them abnormal.

In the child in whom the condition is recognized in early infancy, it is usually possible to effect a cure by simply applying an abduction splint of a type described by Putti (*Congenital Dislocation of Hip, J Bone & Joint Surg* 11 798 [Oct] 1929) and used in this country by a number of orthopedic surgeons. There is also a simple and apparently equally effective apparatus described by Chapple (*Congenital Dislocation of the Hip in Infancy, J Pediat* 6 306 [March] 1935). This splinting should be continued for twelve months.

If treatment is delayed until the child is more than 2 years of age, continuous casts, repeated closed reductions and, in about 20 per cent of the cases, open reduction may be necessary. The older the child when treatment is begun, the greater is the danger of serious permanent disability. The need for early diagnosis and early treatment cannot be overemphasized.

LACK OF FREE HYDROCHLORIC ACID IN GASTRIC CONTENTS

To the Editor—1 What diseases other than pernicious anemia, carcinoma and achylia show a persistent lack of free hydrochloric acid in the gastric analysis? 2 Is the lack of free hydrochloric acid compatible with good health aside from minor intestinal disturbances? 3 Please refer me to literature.

MD California

ANSWER—1 Acid secretion and ferment secretion are two distinct results of gastric glandular secretion and are independent of each other. Achylia gastrica implies a complete absence of both secretions. Achlorhydria, or lack of hydrochloric acid, is relatively frequent as compared to achylia. Achlorhydria may be found in acute and chronic gastritis, secondary to chronic appendicitis, cholecystitis or pancreatitis, in severe secondary anemias and in severe wasting disease. It may arise as a result of acute depressed mental conditions and sudden nervous shocks. It may be diminished or offset prior

to each menstrual period. It may be present as a congenital condition. The condition may give rise to no symptoms or only those of the primary disease may be manifested. Gastric symptoms are present in about 3 per cent of the cases, such as anorexia, fullness in the stomach, eructations, and at times heart burn. Intestinal symptoms are more frequent and present in approximately 34 per cent of cases, most commonly diarrhea and less frequently flatulence and intestinal toxemia.

2 Yes

3 References

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LOSS OF WEIGHT DURING PREGNANCY

To the Editor—Will you please discuss the probable causes of loss of weight in the case described? A primipara aged 24 apparently in good health married five years had her last menstrual period Dec. 16, 1935. The estimated date of confinement is Sept. 24, 1936. The past history is unimportant except for hyperthyroidism four and a half years ago from which she states that she recovered with good health for in the past four years her lowest weight has been 104 pounds (47 Kg.), her best weight 118 pounds (53.5 Kg.) before pregnancy. May 11 the fifth month of pregnancy her weight was 116.34 pounds (52.9 Kg.) no gain in weight. June 11.67 pounds (52.8 Kg.) July 11.6 pounds (52.6 Kg.) August 11.6 pounds (52.6 Kg.) September 13 11.87 pounds (53.7 Kg.) September 24 the day of delivery of a healthy infant weighing 6 pounds (2.7 Kg.) her weight was 114 pounds (51.7 Kg.) a loss of 2.34 pounds (1.2 Kg.) the last four months of pregnancy. The total amount of amniotic fluid at delivery was approximately 6 ounces (178 cc.). The patient remained apparently in good health throughout pregnancy and showed none of the usual signs of a return of the hyperthyroidism. Please omit name.

M. D. Maryland

ANSWER—It is unfortunate that the patient was not subjected to at least one basal metabolism study during the latter months of pregnancy, because a marked increase in the basal metabolic rate might have explained the weight loss. However, a high basal rate during pregnancy is by no means always associated with a loss in body weight. Strenuous dieting during pregnancy can account for a loss of weight even in the presence of a baby of normal or above normal weight at birth. In the absence of definite hyperthyroidism and deliberate restriction of carbohydrates and fats, it is difficult to account for the loss of weight. Some disturbance in the glands of internal secretion may be at fault but what this is cannot be decided. An actual loss of weight during the latter months of pregnancy is most unusual hence an adequate study of such cases has not been made.

USE OF ANTHELMINTICS DURING PREGNANCY

To the Editor—A well nourished woman aged 30 two months in her second pregnancy has taenia saginata. There are no symptoms except increased appetite. She has noticed the worm segments being passed at stool during the last two or three months. Is it advisable to wait until pregnancy has terminated before giving treatment? If not what is the most desirable method of treatment in this case?

V. L. HAWES M.D. Ramsey, N. J.

ANSWER—In the absence of any symptoms attributable to *Taenia saginata* infestation it is advisable to wait until after labor has been terminated to administer anthelmintic treatment. Solomon Solis-Cohen in discussing the oleoresin of aspidium, lists pregnancy as a contraindication to its use.

On the other hand Leon Moise (*Ann. fac. franç. de med. et de pharm. de Beyrouth* 3: 183 [May] 1934) comes to the conclusion that it is advantageous to treat all pregnant women who show signs of infestation. He reports a case of *Taenia saginata* infestation in pregnancy which in the ninth month, showed signs and symptoms simulating the preeclamptic state. Anthelmintic treatment was followed by prompt alleviation of symptoms and the disappearance of albumin from the urine. Another case of tachycardia in the puerperium was relieved by the spontaneous elimination of the parasite. To support this assertion further he cites J. Guart's contention that secondary infection is much more likely with the breaking down of the epithelial barrier in the intestine and the passing into the blood stream of *B. coli*. Joviaux believes that the presence of

Taenia saginata may interfere with pregnancy and cause abortion and that the absorbed toxins may be secreted in the milk of the mother.

If symptoms should appear, treatment in a hospital would be desirable. The anthelmintic of choice (Bethesda O. W. Tenafiges, *Internat. M. Digest* 24: 47 [Jan.] 1934) is oleoresin of aspidium (male fern). The period of preparation should be longer, the bowels being gently evacuated and no drastic purgatives to be employed. It would perhaps be wise to use the minimum dosage and certainly not exceed 10 Gm. The usual precautionary measures to prevent absorption of the drug must be exercised. If the patient is treated after delivery, nursing is temporarily suspended.

CHANGING SEX IN GOATS

To the Editor—In the September 16 issue of the Indianapolis Star I noticed an article which with two pictures to demonstrate its authenticity stated: At the top picture is Billy a pet goat on the farm of Fred Jordan in Greene County whose sex life is a cause of much comment because he changed from a male to a female quite without warning or explanation. Having proved his masculinity by being the father of three kids by a nanny goat Billy later confounded his owner by developing an udder and giving milk—one quart a day. Below is an udder view of Billy which shows him (or her) in action as a female of the species by giving down a copious stream of milk. There is no doubt regarding the authenticity of the article as numerous people have viewed the goat in question. As this is a very interesting condition I should like a scientific explanation as to how it could take place. 1 Since this animal has only male external organs and has been able to fertilize the female would this be a case of unilateral hermaphroditism? 2 Since lactation has taken place in this animal will it change his male characteristics in the future or will his future actions be the same as before lactation took place? 3 Is it ever possible for human beings without female gonads to lactate? 4 Do females ever have lactation without pregnancy?

M. D. Indiana

ANSWER—Sex is usually determined predominantly by male or female. However, double sex potentialities in vertebrates is always exhibited to some degree in that each embryo (including the human species) develops at first a gonad of common pattern which will develop into male or female under proper conditions. Each embryo also develops both male sex ducts (wolffian ducts) and female sex ducts (müllerian ducts). Usually the gonad develops positively into a testicle or ovary and the duct system into the appropriate male or female type. In goats particularly various grades of hermaphroditism are quite common and mixtures of all types of gonads and ducts have been recorded. The hermaphroditic condition may be visible externally at birth or may express itself only in later development. One sex can predominate, or organs of the two sexes (gonads and ducts) may be present in approximately equal amount. In extreme cases of intermixture it is more usual that the animal is incapable of acting as a male or female parent, though evidences of endocrine secretion of both male and female type may be apparent. The animal in question would appear to approach male normality with only moderate female development expressed by mammary growth and lactation.

1 It may be either a unilateral or a bilateral hermaphrodite with late expression of ovarian function.

2 It probably will not change.

3 There must be a source of female hormone sufficient to stimulate mammary development. Normal male guinea pigs injected daily with theelin will grow large mammary glands which will lactate when the injections are stopped at the end of a few weeks. The young may be nourished by these male secretions, provided the male is forcibly restrained, lactating males do not develop a female psyche.

4 Yes, but not usually. Endocrine disturbances are of many grades and in pathologic cases (usually certain types of tumors) men have experienced mammary hypertrophy and lactation.

SHELL'S KIEFZIT

To the Editor—Please inform me whether there could be any ill effects or toxemia for a pet working in a room poorly ventilated and lit. Shell's Kieffzit.

HARRY M. COVELL M.D. Auburn, Me.

ANSWER—This substance is reported to be manufactured by the Shell Petroleum Corporation and to represent a mixture of petroleum distillates with carbon tetrachloride. The latter presumably is introduced for the purpose of diminishing the fire hazard and for increasing solvent action. The percentage of carbon tetrachloride present is unknown.

As carbon tetrachloride is highly toxic and petroleum distillates are injurious to some extent the prospect of injury to a worker is related to the extent of evaporation and the duration of exposure. In case workmen are exposed to carbonyl

tetrachloride in concentrations above 100 parts per million, some or all of the following manifestations may arise headache, nausea, vomiting, diarrhea, respiratory tract discomfort, pain and tenderness in the liver region, gastro enteritis and jaundice. These symptoms may, in more severe involvements, extend to others centering about renal injury. These include oliguria, possibly complete suppressed urine, nephritis, and so on. In mild cases irritation to the eyes, nose and throat and mental dullness may be the sole manifestations. Rarely blindness may be produced from the action of carbon tetrachloride. Chemical dermatitis from carbon tetrachloride is common. It is possible that the severe forms of acute carbon tetrachloride poisoning result from the presence of guanidine in the body, resulting from dysfunction of the liver induced by the action of carbon tetrachloride.

BEHAVIOR AFTER OPERATION FOR FRACTURE OF SKULL

To the Editor—Will you kindly give me information on the subsequent behavior and life history of individuals who have been operated on or have had fracture of the skull. Do they as a rule retain their usual intelligence and normal behavior? Do they develop any uniform type of misbehavior? What form does it commonly follow? Are there statistics available on this subject? Can you refer me to any records or books?

M D Pennsylvania

ANSWER—As to the subsequent behavior and life history of those who have had fracture of the skull or operations on the head and brain, it cannot be said that any uniform type of misbehavior is likely to occur. Possible permanent effects of head injury or brain operations are of course, dependent on the extent and location of the operation or injury. Most published studies on head injury have been concerned essentially with physical changes giving little consideration to changes in behavior. Glaser and Shafer (*THE JOURNAL*, Jan 23, 1932, p 271) and Wortis and Kennedy (*Surg, Gynec & Obst* 55 365 [Sept] 1932) give statistics. As to mental sequelae the most commonly described complex is headache, dizziness irritability, insomnia physical and mental fatigability, a change in character, intolerance to alcohol, and maybe an associated defect in memory. It must also be recognized that head trauma may be only contributory to the development of behavior changes, for example as in cases in which dementia paralytica becomes manifest after such trauma or an underlying neurosis or personality disorder is thus brought to the fore. The classic contribution of Adolf Meyer (*Am J Insan* 60 373 [Jan] 1904) should be consulted, or the summary of this paper given in *Diseases of the Nervous System* by White and Jelliffe. Other papers that might be consulted are to be found in the *Psychiatric Quarterly* July 1936, *American Journal of Psychiatry* 91, 1934 (two papers), the *Journal of Nervous and Mental Disease*, 1933, and the *Archives of Neurology and Psychiatry*, 1934.

SOURCES AND STABILITY OF VITAMIN A

To the Editor—What are the commercial sources of vitamin A? Will heat destroy all kinds of vitamin A (from different sources such as fish oil and carrots)? Is the rate of deterioration from air exposure well known?

CARLETON DEEDERER M D Miami Fla

ANSWER—There are a number of commercially available preparations which either contain vitamin A or have a vitamin A effect. New and Nonofficial Remedies lists carotene (a mixture of the isomeric forms of this hydrocarbon which functions as provitamin A), cod liver oil and other fish liver oils (which contain vitamin D as well as vitamin A). There also are a number of concentrates of fish liver oils. It is advisable to use only those preparations which stand accepted by the Council on Pharmacy and Chemistry. The potency of the products is declared in U S P units on the label.

Of course, the usual sources of vitamin A for the vast majority of people are foods, particularly animal foods such as butter and liver, vegetable products which are yellow, such as yams yellow corn and carrots, and some green plants in which the chlorophyll masks the yellow provitamin A, such as spinach escarole, lettuce and turnip and dandelion greens.

Heat in the presence of oxygen will destroy all varieties of vitamin A including the three isomeric carotenes, kryptoxanthine and vitamin A itself. The rate of deterioration of vitamin A from exposure to the air is variable. Solutions of crystalline carotene in oil lose their orange color and their vitamin A potency within a few weeks but the loss in potency of the vitamin A of fish liver oils is much less rapid. Certain substances retard the rate of destruction of vitamin A. Generally speaking it is well to keep preparations containing vitamin A in the cold and in the dark.

ALLEGED INTERFEROMETRIC EXAMINATIONS OF BLOOD FOR HORMONES

To the Editor—A woman presented me with a written statement by another physician as follows: Interferometric blood examination showed deficiency in ovarian thyroid and adrenal secretion and a hypersecretion of the anterior lobe of the pituitary gland. In addition to this the various glands were itemized as follows: ovarian 34 test 9 pit ant 26 pit post 10 thyroid 37 parathy 12 adr 17 pin 5 thymus 4. Will you please inform me as to what this interferometric blood test is? I am particularly interested in knowing how one may test the function of the pineal and thymus glands in any one and most curious as to how one may test the testicular function in a woman. Any information you may give me will be appreciated.

M D New York

ANSWER—The interferometer is a device used by physicists to measure dispersion of light and by no stretch of imagination could it be used to estimate the hormone content of the blood. The 'interferometric blood examination' reported above is sheer nonsense or worse.

The recognition of certain hormones by spectroscopic examination seems to be within reach, but so far this method has been confined to the recognition of pure substances. There is no authentic report in which the spectroscopic method has identified hormones in the circulating blood.

It is obviously impossible to estimate the testicular function in a woman, although androsterone may be isolated from female urine.

Little is known of the function of the thymus. Attempting to test this function is to test an unknown quantity. Any consideration of the pineal gland is unadulterated speculation.

X RAY TREATMENT AFTER REMOVAL OF TUMOR

To the Editor—A white man, aged 60 presented himself with a skin ulcer located on the abdominal wall about half an inch below the navel. Originally the lesion was a strawberry tumor as the patient called it which broke down two years ago into a creeping bleeding ulcer about 2 inches long by 1 inch wide. Excision of a large section of the abdominal wall including the navel and down to the rectus muscles did not disclose any axillary adenopathy. The laboratory report was basal cell carcinoma. Is surgery sufficient or would you advise x ray therapy as being necessary?

M D New York

ANSWER—Opinions differ as to the value of x-ray therapy after surgical removal of malignant tumors. With a basal cell carcinoma on the abdominal wall of the size mentioned, if removed widely x-ray therapy may be unnecessary. If definite metastases cannot be removed they might be treated by x-rays if a therapist is available with lots of experience and one who would be sure to give killing rather than stimulating doses. Some tumors seem to be stimulated to more rapid growth after small doses of x-rays.

CORRECT CYLINDER FOR DISTANCE VISION

To the Editor—I know that the minus cylinder is at a right angle or 90 degrees from where the plus cylinder should be. On changing the lenses in these cases to a plus from a minus I have been having difficulty in getting the patients to believe that the plus cylinder is the right one because as they say things are not as distinct and sharply outlined as before. What if any trouble could arise from this incorrect wearing of minus cylinders in place of the correct plus cylinders? Please understand that I am not speaking of simple myopic astigmatism. Please omit name.

M D Ohio

ANSWER—A plus cylinder often blurs distance vision even when it is the correct glass for correction of the error of refraction when the eye is tested under a cycloplegic. This is due to the fact that after the cycloplegic effect has "worn off" the ciliary muscle contracts and renders the lens more convex, the glass does the same thing, so that there is a doubled effect, the image is in front of the retina and vision blurred.

No great harm can come to the eye from wearing a weak concave cylinder under these circumstances although it is not theoretically correct, it often has to be done to get good distance vision.

CAN THE SEX OF CHICKS BE CHANGED?

To the Editor—A patient in the chicken hatchery business has asked me whether there is any information available about the use of endocrine products for the purpose of making all chicks female. If you can name any literature that would be useful I would appreciate it.

F A McMURRAY M D Vashon Wash

ANSWER—Hormone preparations have been injected into the developing egg with considerable modification of the sex glands and ducts in the developing chick examined a day or two before hatching. Thus far these experiments have not been carried to the point at which information is available with regard to the conditions of chicks hatched after such treatment. Injection into young and adult males does induce female feathers on males but does not change the sex glands into ovaries.

Medical Examinations and Licensure**COMING EXAMINATIONS****STATE AND TERRITORIAL BOARDS**

ALABAMA	Montgomery	June 28	Sec. Dr. J. N. Baker	519 Dexter Ave. Montgomery
ALASKA	Juneau	March 1	Sec. Dr. W. W. Council	Box 561 Juneau
ARKANSAS	Medical (Regular)	Little Rock	Dec. 21-22	Sec. Dr. L. J. Kosminsky
TEXARKANA	Medical (Eclectic)	Little Rock	Dec. 21	Sec. Dr. Clarence H. Young
COLORADO	Basic Science	Denver	Dec. 15-16	Sec. Dr. Esther B. Starks
CONNECTICUT	Endorsement	Hartford	Nov. 23	Sec. Dr. Thomas P. Murdock
DELAWARE	Dover	July 12-14	Sec. Medical Council of Delaware	Dr. Joseph S. McDaniel
DISTRICT OF COLUMBIA	Basic Science	Washington	Dec. 27-28	Sec. Dr. George C. Rubland
FLORIDA	Jacksonville	Nov. 15-16	Sec. Dr. William M. Rowlett	Box 786 Tampa
KANSAS	Topeka	Dec. 14-15	Sec. Board of Medical Registration and Examination	Dr. J. F. Hassig
KENTUCKY	Louisville	Dec. 7-9	Sec. State Board of Health	Dr. A. T. McCormack
MARYLAND	Medical (Regular)	Baltimore	Dec. 14-17	Sec. Dr. John T. O'Mara
MINNESOTA	Basic Science	Minneapolis	Jan. 4-5	Sec. Dr. J. Charnley McKinley
MISSISSIPPI	Reciprocity	Jackson	Dec.	Asst. Sec. State Board of Health
NEBRASKA	Lincoln	Nov. 15-16	Dir. Bureau of Examining Boards,	Mrs. Clark Perkins
NEW HAMPSHIRE	Concord	March 10-11	Sec. Board of Registration in Medicine	Dr. Fred E. Clow
NORTH CAROLINA	Endorsement	Raleigh	Dec. 6	Sec. Dr. B. J. Lawrence
NORTH DAKOTA	Grand Forks	Jan. 4-7	Sec. Dr. G. M. Williamson	437 S. 3rd St.
OHIO	Columbus	Nov. 30-Dec. 3	Sec. State Medical Board	Dr. H. M. Platter
OKLAHOMA	Basic Science	Oklahoma City	Dec. 1	Sec. of State Hon. Frank C. Carter
OREGON	Basic Science	Portland	Nov. 20	Sec. State Board of Higher Education
PENNSYLVANIA	Philadelphia	Jan.	Sec. Board of Medical Education and Licensure	Dr. James A. Newpher
SOUTH DAKOTA	Pierre	Jan. 18-19	Director of Medical Licensure	Dr. B. A. Dyar
TENNESSEE	Memphis	Dec. 22-23	Sec. Dr. H. W. Qualls	130 Madison Ave.
VERMONT	Burlington	Feb. 8	Sec., Board of Medical Registration	Dr. W. Scott Nay
VIRGINIA	Richmond	Dec. 8-10	Sec. Dr. J. W. Preston	28½ Franklin Road
WISCONSIN	Basic Science	Milwaukee	Dec. 11	Sec. Prof. Robert N. Bauer
WYOMING	Basic Science	Wyoming	Dec. 11-14	Sec. Dr. Henry J. Gramling

**NATIONAL BOARD OF MEDICAL EXAMINERS
SPECIAL BOARDS**

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL November 6 page 1568

California June-July Examination at San Francisco

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners reports the written examination held at San Francisco June 29-July 1, 1937. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and fifty-four candidates were examined, 144 of whom passed and ten failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Arkansas School of Medicine	(1936)	82.2	
College of Medical Evangelists	(1936) 80.2	(1937)	76.7
Stanford University School of Medicine	(1937)	76.3	
University of California Medical School	(1936)	80.3	
University of Southern California School of Medicine	(1937)	77.2	
Yale University School of Medicine	(1935)	81.3	
George Washington University School of Medicine	(1936)	85.4	

Loyola University School of Medicine	(1935)	81.2
Northwestern University Medical School	(1936)	76.6
(1937) 83.9 85.3		
Rush Medical College	(1936)	81
(1937) 76.1 79.3 79.6 80.6 83.8 84.4 85.7		
School of Medicine of the Division of the Biological Sciences	(1934)	80.1
State University of Iowa College of Medicine	(1936)	75.4
Johns Hopkins University School of Medicine	(1934)	83.8
(1935) 88.4		
Harvard University Medical School	(1936)	81.1
University of Michigan Medical School	(1933)	78
(1934) 80.6 (1936) 82.6 (1937) 83.9		
University of Minnesota Medical School	(1937)	80.9
Washington University School of Medicine	(1937) 75.3	84.4
Creighton University School of Medicine	(1936)	76.3
(1937) 75.9 77.9 81.1 83.3		
University of Nebraska College of Medicine	(1922)	78.1
(1936) 79.7 84.2		
Cornell University Medical College	(1935)	81.6
University of Buffalo School of Medicine	(1935)	81.1
University of Cincinnati College of Medicine	(1937)	81.1
University of Oregon Medical School	(1936)	83.1
Jefferson Medical College of Philadelphia	(1936)	84.2
(1937) 78		
University of Pennsylvania School of Medicine	(1936)	83.1
University of Wisconsin Medical School	(1936)	83.7
University of Alberta Faculty of Medicine	(1935)	76.6
Dalhousie University Faculty of Medicine	(1934)	81.2
Albert Ludwigs Universität Medizinische Fakultät Freiburg	(1909)	81.8*
Friedrich Wilhelms Universität Medizinische Fakultät Berlin	(1916) 81.8	92.8*
Universität Heidelberg Medizinische Fakultät	(1910)	76.3*
Universität Köln Medizinische Fakultät	(1921)	78.4*
(1922) 83.2*		
School	FAILED	Year Grad Per Cent
Stanford University School of Medicine	(1937)	73.8
University of California Medical School	(1937)	76.9†
Rush Medical College	(1927) 69	74
University of Michigan Medical School	(1935)	74.7
Creighton University School of Medicine	(1936)	70
Hamburgische Universität Medizinische Fakultät	(1920)	67.2
Julius Maximilians Universität Medizinische Fakultät Würzburg	(1923)	72.8*
Rheinische Friedrich Wilhelms Universität Medizinische Fakultät Bonn	(1911)	74.3*
Magyar Királyi Pazmany Petrus Tudományegyetem Orvosi Fakultása Budapest	(1935)	73.2
* Verification of graduation in process		
† Fell below 60 per cent in two subjects		

* Verification of graduation in process
† Fell below 60 per cent in two subjects

California July Examination at Los Angeles

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at Los Angeles, July 20-22, 1937. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. One hundred and twenty-nine candidates were examined, 115 of whom passed and 14 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1937)	75.1	
Stanford University School of Medicine	(1937)	74.1	
University of California Medical School	(1937)	75.6	
University of Southern California School of Medicine	(1935)	78.7	
Georgetown University School of Medicine	(1937)	76.9	
Loyola University School of Medicine	(1937)	82.7	
Northwestern University Medical School	(1936)	84.8	
Rush Medical College	(1936)	79.9	
School of Medicine of the Division of the Biological Sciences	(1936)	81.6	
University of Illinois College of Medicine	(1937)	78.7	
State University of Iowa College of Medicine	(1936)	77.3	
Louisiana State University Medical Center	(1937)	81.1	
Johns Hopkins University School of Medicine	(1937)	79.9	
University of Michigan Medical School	(1936)	83.2	
St. Louis University School of Medicine	(1936)	81.4	
Washington University School of Medicine	(1937)	81.1	
Creighton University School of Medicine	(1935)	83.9	
University of Rochester School of Medicine	(1936)	83.9	
University of Oklahoma School of Medicine	(1937)	85.4	
Jefferson Medical College of Philadelphia	(1936)	81.1	
University of Pennsylvania School of Medicine	(1937)	81.1	
Woman's Medical College of Pennsylvania	(1937)	81.1	
University of Wisconsin Medical School	(1937)	79.2	
University of Manitoba Faculty of Medicine	(1935)	81.1	
University of Western Ontario Medical School	(1937)	81.1	
McGill University Faculty of Medicine	(1937)	81.1	
Friedrich Wilhelms Universität Medizinische Fakultät	(1911)	81.1	

Schlesische Friedrich Wilhelms Universität Fakultät Breslau	Medizinische (1927)	76 9†
Universität Rostock Medizinische Fakultät	(1920)	88 4†
FAILED		
School	Year Grad	Per Cent
College of Medical Evangelists	(1936) 73 9, (1937) 72 4	73 6
Stanford University School of Medicine	(1936)	64 8,
(1937) 71 6 72 7		
Rush Medical College	(1936) 71 4	(1937) 73 1
Tufts College Medical School	(1934)	67
Detroit College of Medicine and Surgery	(1933)	71 2
Creighton University School of Medicine	(1936)	69 6
Vanderbilt University School of Medicine	(1935)	74 1
Marquette University School of Medicine	(1937)	75 4†
Ludwig Maximilians Universität Medizinische Fakultät, München	(1922)	71 7†

* This applicant has received the M B degree and will receive the M D degree on completion of internship

† Verification of graduation in process

‡ Fell below 60 per cent in two subjects

Book Notices

Bacteriology A Text Book of Micro organisms By Fred Wilbur Tanner Professor of Bacteriology and Head of the Department University of Illinois Urbana Third edition Cloth Price \$3 50 Pp 510 with 146 illustrations New York John Wiley & Sons Inc London Chapman & Hall Limited 1937

The author intended this book to be an introduction to the science of microbiology. He decries the custom of taking students too deeply into pathogenic bacteriology in their first course. He therefore stresses nonpathogenic as well as pathogenic micro-organisms. He believes that the constant tendency is to slight the classification of bacteria and to overemphasize the disease-producing micro organisms. The unsatisfactory condition of the classification of micro organisms may be partly due, he says, to the reticence of instructors to discuss such questions. In accordance with this idea, he devotes an unusual amount of this book to the subject of nomenclature and classification of bacteria. In fact, all of chapter six is devoted to that subject. Instead of the usual many pages about methods to identify pathogenic bacteria, there is much on such subjects as water bacteriology, sewage treatment and bacteriology, the bacteriology of milk products, and the use of bacteria in such industrial processes as the making of bread, vinegar, fermented milks and wines. There is a chapter on food preservation, including home canning and the industrial preservation of foods, also a chapter on food poisoning and allergic reactions due to foods. The last three chapters have to do with immune bodies, and the theories and varieties of immunity.

The statement made concerning the glossary in this book in the review of the first edition published in *THE JOURNAL*, May 4, 1929, is still applicable. It was as follows: "A truly remarkable feature of the book is the glossary, which, presumably designed as a help to the student, defines pus as 'the product of suppuration' and suppuration as 'formation of pus'. Fixation is stated to be 'the act of holding fast' and contact the 'mutual touching of two agents'. A sanitarian is defined as 'a public health officer'." Such definitions are especially notable for their extreme simplicity.

Endocrinology Clinical Application and Treatment By August A. Werner M.D. F.A.C.P. Assistant Professor of Internal Medicine St. Louis University School of Medicine Cloth Price \$3 50 Pp 672 with 260 illustrations Philadelphia Lea & Febiger 1937

The appearance of each of the many new textbooks on clinical endocrinology brings with it the pious hope that here at last is a complete, competent and highly critical dissertation. So much nonsense has been written on the subject in journals and books and in the advertising "literature" of the drug houses and so chaotic is the actual therapy of glandular disturbances, real and alleged, that a clear, simple and at the same time iconoclastic discussion of the whole field is urgently necessary.

Dr. Werner's book, while among the best yet written on the subject still falls far short of this goal. This should not be surprising no matter what the merits of the author, endocrinology is now too vast a subject and it is developing at too fast a pace to be adequately covered in its entirety by one man. This is manifested in the present case by markedly uneven treatment accorded the various subjects, the sections on gonadal

disturbances, for instance, are generally excellent, while that on the adrenals is quite inadequate and in many respects erroneous and misleading.

But with all its shortcomings, and there are many, this is nevertheless a useful book and the author is to be commended for its valuable features. The style is lucid, simple and direct. The text is obviously written for the average practitioner and he will find it understandable. The illustrations are excellent and numerous, much attention has been paid to the convenience of the reader in their arrangement throughout the book. Case histories, both from the author's own practice and from the literature, are liberally distributed in the text. Unlike other popular tomes on the subject, the author is commendably cautious about the nature of the commercial glandular products he recommends, though it is unfortunate that of the preparations mentioned most appear to be manufactured by one firm, the author even employs this firm's trade names to represent active principles in several instances. The nomenclature in general could be much improved.

A serious fault is the tendency to philosophize and to theorize about the specific nature of the glandular dysfunctions underlying many of the clinical syndromes described. Much of this hypothetical material has only a nebulous basis and it may lead to specific endocrine therapy where it is not indicated. In endocrinology, and particularly in clinical endocrinology, the words "we do not know" are still adequate to all but a small fraction of the subject, one of the best services any author can perform is to point out clearly the limitations of our knowledge. This Dr. Werner has actually done in numerous instances, unfortunately not in more.

The book is beautifully printed with regard to both text and illustrations, the former is marred by a sprinkling of typographic errors which it is hoped will be corrected in subsequent printings.

Failure of the Heart and Circulation By Terence East M.A. D.M. FRCP Physician Kings College Hospital Cloth Price 2s 6d Pp 130 London John Bale Sons & Curnow Ltd 1937

Dr. East has written an excellent small book on the failure of the heart and circulation in the series of pocket monographs on practical medicine. This little volume is extraordinarily concise and clear. Among the special features to be recommended are chapter II, on the defaulting ventricle, chapter III, on the causes of heart failure, chapter IV, on the pulmonary effects of heart failure and the statement that dyspnea and cyanosis occur in mitral stenosis before congestive failure sets in, chapter VII, on special causes of heart failure, chapter VIII, on heart failure in pregnancy, with the recommendation of paraldehyde as a safe and useful hypnotic when others fail, the emphasis on pulmonary congestion in left ventricular failure, the so called dry failure before peripheral edema appears, the indications for the use of quinidine, the advisability of trying digitalis first in auricular flutter, particular emphasis on suitable diets, the details of massage and exercise in the after-treatment (pp 101 to 103), and the consideration of total thyroidectomy. It is especially to be noted that the author states his belief that digitalis may be helpful in heart failure even when the rhythm is normal, contrary to some of the recent opinions of the English school. An interesting point appearing on page 32 is that dyspnea is apparently not increased as the result of the rise of venous pressure in the head by compressing the veins in the neck by a pneumatic cuff. The author writes of the practical value of the histamine method of determining the circulation rate. He apparently has had a good deal of experience with this method clinically, and it would be of interest to have others confirm his opinion.

There are a few statements which may be open to question. On page 1 peripheral failure is said to be much rarer than central or heart failure, but certainly in slight degree at least peripheral failure is common, as for example in infectious diseases, from blood loss, in accidents, and even in simple syncope. On page 11 atheroma of the coronary arteries is said to be the commonest cause of defects of the myocardium causing failure, the word 'defects' here needs the qualifying definition of 'destructive lesions'. In chapter IV one might add that the reduction of vital capacity in congestion of the lungs is due probably not only to the rigidity of the lungs but also to the

reduction of air space. On page 34 there is an implication that the term "cardiac asthma" is not a suitable one because of the possibility of the confusion with bronchial asthma. It is, however, the experience of most observers of patients with asthmatic breathing in the course of an attack of left ventricular failure that the asthmatic breathing is simply set off reflexly. There may or may not be asthmatic breathing with pulmonary congestion, but cardiac asthma as such must be considered a definite entity. The value of atropine as given with morphine in the treatment of acute pulmonary congestion, with or without cardiac asthma, is doubtful. The definite disadvantage of atropine is its tendency to raise the heart rate. Certainly the morphine is the most important therapeutic measure. More study should be made of the problem of the use of atropine under these circumstances. On page 51 gallop rhythm is discussed and is noted as presystolic. The most serious type of gallop rhythm is protodiastolic or middiastolic in time, and in such cases only with very fast heart rates does the third sound closely approach the first sound. The presystolic gallop rhythm is rightly ascribed to auricular action (with or without prolongation of the PR interval) but it may occur without dilatation and failure of the left ventricle, whereas the protodiastolic gallop rhythm is more serious and almost invariably means great weakness of the left ventricle. On page 53 the systolic murmur of mitral incompetence due to ventricular failure is called "low pitched," but sometimes it may be higher pitched and very loud. On page 57 emphysema and bronchitis are said to be the commonest causes of the few cases of primary right-sided failure, but in parts of the world where rheumatic heart disease is common, mitral stenosis ranks far ahead of emphysema and bronchitis. On page 60 nutritional edema should be mentioned in differential diagnosis. There is too much emphasis on the rare phenomenon of syphilitic obliteration of the pulmonary arterioles, called Ayer's disease. This is too rare for more than the briefest mention in a small book of this sort. On page 83 the emergency use of digitals is described but the dose given is smaller than sometimes indicated. On the other hand the daily ration for the maintenance of digitalization stated on page 86 as 3 grains of the powdered leaf is rather too high for most patients. On page 88 there is a note as to two uses of epinephrine, but it may be useful in a third way in helping to control asthmatic breathing in cardiac asthma. Mention should be made on page 100 of the occasional and serious complication of infarcts of the lung in the presence of congestive failure. It would be well, too, to amplify the discussion of the treatment of cardiovascular syphilis. The importance of continuing treatment, for example, by alternate carefully regulated courses of bismuth and arsenic compounds over a period of at least two years and then at intervals afterward should be emphasized. Finally, it should be added on page 115 that in skilled hands paravertebral alcohol injection for the relief of angina pectoris has been a useful procedure, well worth further trial.

It is a pleasure to recommend this book for the use not only of internists particularly interested in cardiac disease but also to the general practitioner and medical student.

Appertizing or the Art of Canning. Its History and Development. By A. W. Blitting, M.D. Food Technologist Research Laboratory National Canners Association. Cloth. Price \$7. Pp. 852 with illustrations. San Francisco: Food Machinery Corporation (The Trade Pressroom). 1937.

This book is a valuable contribution to the highly developed art of canning. It covers the history and development of commercial canning procedures and discusses the technical aspects of large scale canning of individual products. The name "Appertizing" has been coined by the author in honor of the Frenchman Nicolas Appert, who in 1810 announced the results of his experiments on the preservation of foods and thus laid the foundation of the canning industry of today. There is a brief appraisal of the work of Appert in the introductory portion of the book. A number of important papers are reprinted for their historical significance. They include the report by H. L. Russell on "Gaseous Fermentation in the Canning Industry," first published in 1895, and the report by Samuel C. Prescott and W. L. Underwood on "Micro-organisms and Sterilizing Processes in the Canning Industry" first published in 1896. Following the historical portion the author has presented a detailed description of the technique of canning indi-

vidual products, the subjects being listed alphabetically. A general idea of the type of discussion may be gathered by listing the headings under a product such as grapefruit. There is an introductory paragraph about the history of the cultivation of this fruit, followed by a discussion of the history of canned grapefruit which includes statistics regarding the growth of the industry. The remaining material is presented under such headings as raw material, sizing, peeling, lye peeling, filling, exhausting and cooking, recommended label weights and United States standards for grades of canned grapefruit. The subjects are discussed primarily from the point of view of the commercial canner, and the technologic rather than the nutritional aspects are emphasized. The book is a valuable summary of the art of canning and should be of interest to all commercial and institutional packers.

Osnovy likvorologii. Anatomiya fiziologiya fiziko khimicheskie i biologicheskie svoystva. Metody issledovaniya. Patologiya. [By] A. P. Fridman. [Study of Cerebrospinal Fluid. Anatomy. Physiology. Physicochemical and Biologic Properties. Methods of Study. Pathology.] Cloth. Price 10 rubles. Pp. 472 with 97 illustrations. Leningrad: Gosudarstvennoe izdatel'stvo biologicheskoy i meditsinskoy literatury. 1935.

This volume in Russian is the second edition of the *Principles of Liquorology*. It is based on experimental and clinical investigations of the author carried out at the All Russian Institute of Experimental Medicine (V. I. E. M.). The aim of the author is to present in a brief form data collected from the universal literature as well as a brief summation of his own observations and experiments. The attempt is rather to outline the principles of the new discipline which the author calls "liquorology" than to present an exhaustive presentation of the subject. In the discussion of the physiology of the cerebrospinal fluid he attempts to elucidate the questions of production and absorption of the fluid of its statics and its dynamics. He rejects the concept of cerebrospinal fluid as a lymph or a blood filtrate. A special chapter is devoted to the buffer function of the walls of the channels of the cerebrospinal fluid, the study of brain buffer in the normal and pathologic states. Of a particular interest is the author's observation on the intimate relationship between the cerebrospinal fluid and the fluids which bathe such important organs of sensations as the eye, the ear and the nose. Thus, in his opinion, points to the importance of the role of the liquor in metabolic exchange between the brain and the organism as a whole. Despite the modest claims of the author, the book is a complete textbook on the subject of the cerebrospinal fluid. It contains chapters on the anatomy, physiology, the buffer function of the brain, methods of obtaining the liquor, its investigation, the various biochemical, colloid-chemical and biologic reactions, diagnosis and therapy. The last chapter deals with the peculiarities of the liquor in animals. Each topic is adequately treated. The abundant historical references and the extensive bibliography add much to the unity and comprehensiveness of the text.

Spontane und strahleninduzierte Mutabilität. Von H. Stubbe. Probleme der theoretischen und angewandten Genetik und deren Grenzgebiete. Herausgegeben von H. Böhm et al. Redigiert von W. F. Heine. Boards. Price 6.80 marks. Pp. 190 with 12 illustrations. Leipzig: Georg Thieme. 1937.

This book is the first of a series of about fifty volumes which will discuss special questions of genetics for the non-specialist in a monographic form by the most competent authors in their respective fields. The present volume gives a comprehensive and competent review of the present situation with regard to the induction of mutations by irradiation. In a brief introductory chapter on spontaneous mutability, the different types of mutations (gene mutation, chromosomal mutation, genome mutations and mutations outside the genome) and the known conditions producing these mutations, other than irradiation, are discussed. After a short historical review of the development of radiation genetics a brief yet comprehensive discussion is given in detail of our present knowledge substantiated by experimental evidence regarding the effect of radiation on the gene material. This is discussed according to the effects on the gene, the chromosome and the genome. Regarding the effect of radiation on the gene, the most important conclusions are as follows: The quality of the experimentally produced mutation is does not differ in any respect from those mutations which occur spontaneously. Irradiation only increases the number of the e-

mutations There is a linear proportion between the gene mutation rate and the dose of radiation. Regarding the effect of different qualities of rays, it can be concluded that this effect depends on the penetrating power of the rays and that every quality is able to produce mutations if only enough radiating energy is delivered to the cells. There is no difference in the effect of the mutating power of irradiation between the hardest and the softest parts of the spectrum, provided the dose is the same. The many special questions related to mutation by irradiation are discussed in detail, as far as substantiated experimental evidence is available, and the new problems arising are briefly sketched. The author never loses himself in speculation. Following the discussion of the experimental evidence, the practical consequences drawn from this theoretical field are briefly indicated, such as the application of radiation genetics to animal and plant breeding and the importance of protection from radiation in man. It is surprising how this field, which began its development only in 1927 with the classic experiments by H. J. Muller, has developed in ten years into an important specialty of genetics with the prospect of many theoretical and practical applications in biology and medicine in the future. It is certainly valuable to have on hand this convenient, competent and critical guide through the huge amount of literature by an author who has made important contributions to this field himself.

Principles and Practice of Public Health Dentistry By J. A. Salzman, DDS, Head of Dental Service of New York City Vocational Schools. With a foreword by Alfred Walker, DDS, FACD, Member of New York State Board of Dental Examiners. With a special chapter by John Opie McCall, AB, DDS, FACD, Director of Murry and Leonie Guggenheim Dental Clinic, New York City, and by Harry Strusser, DDS, Chief of Dental Division, New York City Department of Health. Cloth. Price \$4. Pp. 584 with illustrations. Boston: Stratford Company Publishers, 1937.

Beginning with a discussion of the evolution of preventive dentistry, this work covers the organization of dentistry and public health, the role of official and unofficial public health agencies in dentistry and the dental public health program. The great amount of material assembled with accompanying bibliographies, makes it an extremely valuable source book on nearly all phases of dentistry. It shares the defects, as well as the advantages, of any book which attempts to cover so wide a field. The attitude toward sickness insurance and the field of the state in medicine is indefinite and is weakened by almost exclusive dependence on nonmedical writings, many of which are already outdated and some of which have been largely discredited. It is strange that in such a comprehensive discussion there is practically no reference to studies prepared by medical or dental organizations, some of which, at least, are much better sources of information than the works quoted and the use of which would have avoided some of the errors.

Os hormônios testiculares Por Raul Franco de Mello. Paper. Pp. 83 with 9 illustrations. Sao Paulo: Instituto Butantan, 1936.

This is a contribution to the knowledge of testicular hormones from studies and experiments performed at the Butantan and Oswaldo Cruz institutes. The following subjects are covered in the different chapters of the book: history of testicular hormones, results of castration and transplantation of a testicle in man and other vertebrates, relations of the hypophysis and the pineal body to gonads and sexual functions, testicular secretion and chemistry of the testicular hormone. From the book it is manifest that certain sexual and individual characteristics of mammals, birds, amphibians, fish and some invertebrates originate from and persist in influences of the sex glands which have a morphogenic and conservative influence on the genitals, estruation and the psychosexual behavior of man and animals as well as on the evolution of physiologic phenomena and the development of structures unrelated to sexual functions, as that of the body, the hair of certain animals and the feathers of birds. Men and animals lose, by castration, the sexual differential characteristics of their type and attain a type that is common to the two sexes. The later in life castration takes place, the stronger is the persistence of the sexual characteristics after castration. It is probable that the somatic cell of mammals and birds is sexually indifferent and differentiates to either sex during embryonic life. The testicular hormone is secreted by interstitial cells and controls the development of the most important sexual characteristics. There is a reciprocal

functional relation between the hypophysis and the testicle. Hormones of the hypophysis stimulate the germinative epithelial cells of the gonads to secrete a hormone that controls secretion of hypophysial hormones. Rupture of the equilibrium of the hypophysial testicular relations from destruction of the germinative epithelium results in suppression or diminution of the testicular hormone with consequent hyperfunction of the anterior lobe of the hypophysis. In cases of destruction of the germinative epithelium of the testicle, induced by any one of several different means, the hypophysis enters in hyperfunction and shows histologic changes. There are, locally, castration cells and basophilia. The testicle continues secreting masculine hormone in sufficient quantity to maintain the functions of accessory genitalia. The existence of two different testicular hormones seems to be a fact that will be clarified by further chemical studies of the testicular hormone. A page of bibliography is at the end of the book.

The Practice of Ionization By J. Newton Dyson, M.R.C.S., L.R.C.P. With a foreword by Elkin P. Cumberbatch, M.A., B.M., D.R.M.E. Cloth. Price \$1.50. 6s. Pp. 178 with 9 illustrations. London: Henry Kimpton, 1936.

Ionization, or iontophoresis, has come to the fore in recent years because of the enthusiasm held for it in certain quarters. It is one of the simplest and oldest forms of electrical treatment. One of the objects of this book is to indicate the uses of ionization, its various actions and its limitations, and thus aid in avoiding confusion or disappointment. The electric current is described in some detail, as is the apparatus and the method of application. The clinical discussion deals with arthritis, deafness and tinnitus, fibrositis, the nervous system, and diseases of the skin and special organs. Claims made for the beneficial effects of ionization in certain conditions need further substantiation. The reviewer has for several years tried ionization in every form for deafness and tinnitus without succeeding in proving that it possesses any merit for these conditions. It is questionable whether it "produces a rapid absorption of the products of acute inflammation" or whether it is possible "to find a marked relief of pain and swelling, if present, as the result of only one or two applications of this current to an acutely inflamed muscle." The description of technic for treating the nasal sinuses demonstrates a lack of anatomic knowledge. It is no simple matter to push a metal rod through the natural ostium of a nasal sinus, as is suggested, nor is the following procedure practical, as recommended by the author: "When the treatment is ended, a strip of gauze soaked in some disinfectant solution is pushed with a probe or fine forceps to the bottom of the sinus." The erroneous statement that Mr. Philip Franklyn devised the method of treating hay fever with ionization indicates the author's unfamiliarity with the literature. The book is an enthusiastic exposition of a method which possesses merit in a limited number of conditions but certainly not in as wide a range as the author would have one believe. The positiveness of statements and claims is not conducive to the best interests of research for ionization or, for that matter, for electrotherapy in general.

What Every Athlete Should Know By John Ernest Gignoux, B.S., M.D., Member of Cornell University Track Team 1895, 1896, 1897, 1898. Fabriloid. Price \$1. Pp. 82 with 2 illustrations. New York: Stadium Press, 1937.

The author, a physician, and formerly a member of several Olympic athletic teams, opens his book with an interesting historical account of the Olympic Games. For almost twelve centuries beginning about 776 B.C., these games were held in Greece every four years. Long after Greece became a part of the Roman Empire, the Roman Emperor Theodosius, having become Christianized, considered the Pagan games harmful and stopped them in the year 394 A.D. In 1896 the Olympic Games were revived in Athens in a stadium which had been built about 330 B.C. and had been recently restored. It is 26 miles from the plains of Marathon, from where, after the Greek military victory, a runner carried the news to Athens and then fell dead from exhaustion. The present-day Marathon is a 26 mile race. The author follows his entrancing bit of history with a review of the human anatomy that is especially significant in the development of athletes and with some good advice on physical training.

Die akute Mittelohrentzündung Eine Darstellung für den Dienst am Kranken. Von Doz. Dr. med. Helmut Richter, Oberarzt der Universitäts-Klinik für Ohren, Nasen und Kehlkopfkrankheiten, Erlangen. Boards. Price 3.20 marks. Pp. 57 with 18 illustrations. Leipzig: Curt Kabitzsch, 1937.

Richter's conception of otitis media is an elaboration of Politzer's old dictum that all the air spaces in relationship with the middle ear are involved to a greater or lesser degree in an otitis media. He also believes that the latter is only a local manifestation of a constitutional or general infection. This may be specific, such as the exanthems, tuberculosis and syphilis, or nonspecific, such as grip and the common cold. Cases are divided into three groups depending on the general resistance of the patient: the acute catarrhal, occurring in eurasian persons, the necrotic, which is found in the dyscrasic, and the otitis acutissima, in which the overwhelming virulence of the invader finds easy access to extratympanic structures regardless of the state of local or general resistance. The elaboration of these three types forms the subject matter of this monograph which seeks to explain the phenomena on practical clinical grounds. The approach and the treatment of the subject matter are novel and serve to enliven a topic which to most otologists has become rather stale and hackneyed.

Dextrose Therapy in Everyday Practice. A Survey of the Literature 1900-1936 on the Experimental and Clinical Studies Applicable to Medicine and Surgery. By E. Martin, Sc.D. With forewords by W. N. Haworth, F.R.S., Director of the Department of Chemistry, University of Birmingham, England, and Bernard Fantus, M.D., Professor of Therapeutics, University of Illinois College of Medicine, Chicago. Cloth. Price \$3. Pp. 451 with 44 illustrations. New York & London: Paul B. Hoeber, Inc., 1937.

This scholarly and elaborate monograph on dextrose medication is a monument to the enormous development that has occurred in the therapeutic use of parenteral dextrose therapy. After a historical introduction the author discusses the surprisingly complex chemistry of dextrose and its equally complex fate in the system. Especially instructive are the dextrose tolerance curves secured under normal as well as abnormal conditions. The bibliography, which reaches the staggering total of more than 2,000 citations, in itself justifies a place for this book in every medical library. It should be emphasized at the same time that the point of view of the book is thoroughly practical, as evidenced by the clinical classification of the therapeutic uses of dextrose, which are discussed in theoretical as well as practical detail.

Chirurgische Indikationen. Von Rudolf Nissen, o. Prof. d. Chirurgie, Direktor der I. Chirurgischen Klinik der Universität Istanbul. Paper. Price 3.50 florins. Pp. 177. Leiden: A. W. Sijthoff's Uitgeversmaatschappij N.V., 1937.

This small volume, written in German, treats of indications, contraindications and the choice of operative procedures in almost every field of general surgery. The author kept in view a twofold object, to emphasize the so-called absolute indications for immediate intervention and to elaborate on the question of intervention and the choice of operation in borderline cases. Undoubtedly the author intentionally omits illustrations as well as literary references. When considering a controversial point such, for example, as the question of drainage versus nondrainage after a cholecystectomy or the choice between a palliative and a radical gastric resection for the cure of a deep-seated duodenal ulcer the author states his own preference instead of leading the reader into a maze of contradictory opinions. The result is a compact volume containing a well-balanced, authoritative well-thought-out discussion of the most important problems in the field of surgical indications, contraindications and choice of the proper type of operation.

Poisons, Poisons and Profits. The Antidote to Radio Advertising. By Peter Morell. Cloth. Price \$2. Pp. 292. New York: Knight Publishers, Inc., 1937.

This is said to have been compiled from material contained in the Consumers Union's files and is intended to serve as a consumers' handbook to cover new material not available when '100,000,000 Guinea Pigs' was published. The volume, with rare courage, takes the radio networks to task for the twaddle and buncombe that is used to boost patent medicine sales under the guise of radio entertainment. There are forceful and entertaining chapters on such subjects as beauty at any price, the slenderizing way to death, the yeast hoax, dental nostrums and peddling human misery for profit. There are

also some interesting individual tables on advertising expenditures. For those interested in the methods and wiles of "patent medicine" merchandising, the work adds considerably to the ever increasing expose.

Urovskaya bolezn v Zabaykale. Vypusk vtoroy. Pod redaktsiei S. V. Dyachenko et al. Vostochnosibirskiy kraevoy otdel zdorookhraneniya i vostochnosibirskiy meditsinskii institut [Urovsk Disease (Osteoarthritis deformans) in Transbaikalia. Second edition.] Paper. Price 4 rubles 50 kopeks. Pp. 208 with 32 illustrations. Irkutsk: Vostochnosibirskoe kraevoe izdatel'stvo, 1937.

The present is the second volume of collected papers published by the Urovsk Scientific Institute. A large number of the population of this Far Eastern territory had been known for the past century to exhibit signs of a peculiar disorder of the joints to which the original investigators, Kashin and Bek, gave the name of endemic deforming osteoarthritis. The incidence of endemic goiter is particularly high and the two conditions are frequently associated. Kashin-Bek or Urovsk disease is characterized by a chronic progressive course with symmetrical involvement and deformation of joints and epiphyses of the long bones, particularly the extremities. The disease is associated with a peculiar form of a genuine congenital rickets and with pathologic alterations in the lymph nodes, the thyroid thymus, spleen and the vascular system. The tendency of the disease is to progression and deformation of the osseous and muscular systems. A relative avitaminosis, lack of vegetables in the diet, insanitary conditions and the peculiarities of drinking water contribute, in the opinion of the investigators, to the etiology of both the continued rachitic state and the goiter.

Health and a Day. Addresses. By Lord Horder. Cloth. Price 7s. 6d. Pp. 213. London: J. M. Dent & Sons, Ltd., 1937.

The title of this book derives from the lecture by Emerson, who wrote "Give me Health and a Day and I will make the pomp of emperors ridiculous." Two essays are included dealing with such subjects as the strain of modern civilization, the relationship of the physician to many aspects of modern society, the advancement of medical science, and euthanasia. Dr. Horder is known for his interests in many social medical fields. He is a proponent of tranquility, of quiet and of relaxation. He believes implicitly in the personal relationship of doctor and patient and in the necessity for considering the individual human being as an individual if he is to survive. He deprecates the too great invasion by the machine and asserts that where the machine is greater than the man the patient perishes. These are good medical essays, printed in large type on good paper, and should furnish welcome relaxation and at the same time stimulation to every medical reader.

Elements of Orthopedic Surgery. By N. Ross Smith, M.B., Ch.B., F.R.C.S., Orthopedic Surgeon, Cornell Hospital, Poole, England. Foreword by R. C. Elmslie, O.B.E., M.S., F.R.C.S., Orthopedic Surgeon, St. Bartholomew's Hospital, London. Cloth. Price \$4. Pp. 216 with 99 illustrations. Baltimore: William Wood & Company, 1937.

This pocket size book was written by two able and well-known British orthopedic surgeons. It is not a compendium; it is a miniature of larger textbooks and covers the essentials of the specialty. There are eleven chapters and three appendices on physical therapy, splints and appliances and plaster of Paris technique. It is an ideal book for nurses, physical therapists, social and welfare workers, interns and practitioners who have need of a conversing knowledge of orthopedic surgery.

The Seamen's Handbook for Shore Leave. By Mrs. Henry Howard. Sixth edition. Fabrikoid. Price 50 cents. Pp. 435. New York: American Merchant Marine Library Association, 1937.

As an aid to American sailors the American Merchant Marine Library Association has published this excellent, pocket size flexible covered guide. The volume contains an alphabetical list of 440 world ports, with the names of inexpensive hotels, hotel rates, information on legal aid hospitals, venereal disease clinics, doctors, dentists, laundries and amusements. It also gives specific warnings about conditions in various ports, information concerning money, radio call signals for emergency sickness and a vast amount of additional data. Many public service organizations cooperated in the development of this most useful little book. It is among the most practical items of its kind and will be found exceedingly useful not only by sailors but by anybody else traveling round the world.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts Jurisdiction of Federal Court to Enjoin Enforcement—Arthur O Borland and the other complainants in this case were graduated by the California University of Liberal Physicians, an institution incorporated under the laws of California. Without obtaining a license under the medical practice act, they proceeded to engage in the practice of naturopathy in Hawthorne, Calif., after paying a license fee to the city. Proceedings were instituted against them under the medical practice act and each complainant was found guilty and fined \$100. Thereafter they appealed to the superior court of California for Los Angeles County but that court refused to entertain jurisdiction of the appeal because it had not been effected within the period specified by law. The next move of the complainants was to file a complaint in the United States district court for the southern district of California, central division, asking the federal court to enter a decree declaring the medical practice act unconstitutional, the judgment of the state court nugatory and void, and to issue an order restraining the defendants from further annoying and harassing the complainants. The district court dismissed the bill of complaint, and the complainants appealed to the United States circuit court of appeals, ninth district.

The practice of naturopathy, the court said, is defined in Webster's Dictionary as "a system of physical culture and drugless treatment of disease by methods supposed to stimulate or assist nature." It was apparent to the court that the complainants asked relief against the judgment rendered by a state court on the ground that the act on which the action was predicated was unconstitutional and void, but that defense could have been presented in the state action. The bill of complaint showed affirmatively that the state court had jurisdiction of the parties in the action before it and that the violation charged was a misdemeanor over which the justice court had jurisdiction. Under these circumstances, the federal district court did not have jurisdiction of the suit and properly dismissed the bill. In a specially concurring opinion, one justice pointed out that under the federal judicial code a writ of injunction may not be granted by any court of the United States to stay proceedings in any state court except in cases in which such injunction may be authorized by any law relating to proceedings in bankruptcy. 28 U S C A Sec 379. The judgment of the district court dismissing the complaint was therefore affirmed.—*Borland et al v Johnson*, 88 F (2d) 376.

Charitable Hospitals Exemption from Taxation—An Iowa statute provides that "all grounds and buildings used by charitable, benevolent institutions and societies solely for their appropriate objects, not exceeding 320 acres in extent and not leased or otherwise used with a view to pecuniary profit," shall be exempt from taxation. For about fifteen years prior to March 11, 1933, a physician owned two houses in Readlyn, Iowa. He lived in one of the houses and used the other as a private hospital. On the date named, the physician, his wife and a nurse in the hospital formed a corporation known as the Readlyn Hospital for benevolent, charitable and scientific purposes, and not for pecuniary profit. The two houses were conveyed to the corporation and thereafter it was claimed that the property owned by the corporation was tax exempt under the provisions of the Iowa statute quoted. The county officials advertised the property for sale for the nonpayment of taxes and the corporation sought to restrain the collection of the taxes. The trial court decided against the corporation, which then appealed to the Supreme Court of Iowa.

After the conveyance of the property to the corporation the physician continued to use one house as his residence and two rooms in the hospital building for his offices. The corporation contended that the recital in articles of incorporation that the Readlyn Hospital was organized for charitable and benevolent purposes should be controlling in determining its objects and

purposes. But, said the court, while the objects and purposes of a corporation as expressed in its articles of incorporation may be considered, the recital is not controlling in determining the question of exemption from taxation. This question must be determined from the use made of the property rather than the declaration made in the articles of incorporation. Statutes exempting property from taxation must be strictly construed, and, if there is any doubt about the question, it must be resolved against the exemption and in favor of taxation. A person claiming exemption from taxation must show clearly that the property is exempt within the terms of the statute. The court felt constrained to hold that much of the property involved in this case was used by the physician in his private practice and for his personal gain and, since the property so used formed a part of the property claimed to be exempt from taxation under the statute, the corporation was not entitled to the restraining order. The decree of the trial court against the corporation was therefore affirmed.—*Readlyn Hospital v Hoth, County Treasurer (Iowa)* 272 N IV 90.

Evidence Admissibility of Statements of Patient to Physician—Statements by an injured person as to his condition and symptoms at the time of his examination by a physician, called for the purpose of treatment, are admissible as circumstantial evidence of the existence of the physical condition of the patient. A narrative statement, however, with respect to the cause of the injury and the circumstances attending the accident made to such a physician so long after the accident as not to be part of the *res gestae* are inadmissible, since they are a narrative of past events in the nature of self-serving declarations and hearsay. If this were not the rule, said the U S circuit court of appeals, eighth circuit, an injured person might have himself examined by a physician called for treatment, relate to the physician the alleged facts with reference to the circumstances under which he received his injuries, and place this physician on the witness stand to narrate those alleged facts without himself having to take the witness stand at all. By so doing he could deprive the defendant of the right of cross-examination. Applying the rule thus stated, the court held in this case that the trial court erred in receiving the testimony of physicians which purported to give the insured's version as to the circumstances under which he received his injuries. The judgment for the insured was consequently reversed.—*Actna Life Ins Co v Quinley*, 87 F (2d) 732.

Malpractice Liability of Physician for Unauthorized Act of Hospital Nurse—The plaintiff was born in the Evangelical Deaconess Hospital, a cesarean operation being performed by the defendant. The baby was taken from the operation room to the nursery by the obstetric supervisor of the hospital, who, about an hour later, without the direction or knowledge of the physician, instilled a solution in the baby's eyes from a bottle indicating that it contained a 2 per cent solution of silver nitrate. Severe injury to the eyes resulted, eventuating in blindness. Substantial vision, however, was later regained. Subsequently the baby sued the physician in the U S district court for the northern district of Illinois, western division, and obtained a judgment for \$7,750.50. The physician then appealed to the U S circuit court of appeals, seventh circuit.

The principal question before the court on appeal was the liability of the physician for the unauthorized act of the hospital nurse. At the time the plaintiff was born, there was no law in Illinois requiring the instillation of a solution of silver nitrate or any other solution in the eyes of the new born. No duty, therefore devolved on the defendant to cause any such solution to be instilled. Apparently in this particular hospital a 2 per cent solution of silver nitrate was instilled by nurses as a matter of routine in all normal childbirth cases. Although the plaintiff's birth was not a normal case, the nurse presumably considered it her duty as an employee of the hospital to instill the solution. It was contended that if the physician deemed the instillation unnecessary he should have instructed the nurses that it be omitted. With this contention the circuit court of appeals disagreed. While the physician gave no such instructions neither did he caution the nurse not to fall down and drop the baby nor give orders that on reaching the nursery they

should not give the baby a cold shower. No inferences are to be had against the physician under the circumstances here present, said the court, for his failure to give any negative orders.

The nurses assisting in the operating room at the time of the delivery were the agents and servants of the physician, for they were under his direct control and supervision and subject to his orders. To say, however, that such relation continued in all postnatal treatment administered by the nurses or by the hospital would cast too great a burden on the physician. Even though there may be basis for the contention that the relation of master and servant continued to the extent that the nurses carried out orders and directions of the physician, yet the undertaking of a treatment neither expressly nor impliedly authorized was beyond the scope of their authority as his agents. The physician may not be held liable for the negligence of another assuming to act, not under his directions, but in pursuance of an independent judgment, in the absence of any duty imposed on the physician to perform the act.

In assuming the care of the mother and child, the physician impliedly contracted that he possessed and would use in the treatment of his patients a reasonable degree of skill and learning. He owed a duty toward each to exercise such reasonable care and skill as a reasonably prudent and careful physician and surgeon would use under like circumstances. So far as the record discloses, the physician fully and skilfully performed this duty. He was likewise responsible for the negligent acts of others who were his agents or employees and who were acting within the scope of their employment or agency. But under the circumstances here present it cannot be said that those responsible for the most unfortunate condition of the baby's eyes were in any sense acting for or on behalf of the physician. The trial court should have instructed the jury to find for the physician. The judgment against the physician was therefore reversed and the cause remanded.—*Harlan v Bryant* 87 F (2d) 170

Sarcoma of Hip in Relation to Trauma—*Sellon* a member of the crew of the steamer *H A Scandrett*, fell when a knob of one of the steamer's doors pulled off as he was attempting to open the door and his right hip struck a hatch clamp causing the hip to become black and blue, and painful. Shortly thereafter a lump appeared at the site of the injury, which later proved to be a malignant sarcoma. *Sellon* sued the owner of the vessel to recover damages for the injuries he had sustained. He obtained a judgment in the trial court but died shortly thereafter as a result of the sarcoma. The owner of the vessel appealed to the United States circuit court of appeals second circuit, and the administratrix of *Sellon's* estate was substituted as appellee.

In the trial court, medical expert witnesses testified that the sarcoma resulted from the injury to the hip. On appeal, the causal relation between the trauma and the sarcoma was not questioned, other issues having formed the basis of the appeal. The circuit court of appeals however in affirming the judgment of the trial court awarding damages for the injuries sustained, left undisturbed the finding of the lower court with respect to the origin of the sarcoma.—*Sellon v Great Lakes Transit Corporation*, 87 F (2d) 708

Malpractice Compensation Award as Bar to Malpractice Action—A workman injured his right arm, shoulder and wrist in the course of his employment and was treated by a physician selected by the employer. Subsequent to the termination of the physician's attendance, the workman was awarded compensation by the Missouri compensation commission. Thereafter he sued the physician for malpractice contending that by reason of the physician's negligent treatment he was injured. He admitted that by the workmen's compensation award he had been fully compensated for the disability occurring as a result of his industrial injury and its consequent aggravation by the alleged negligence of the physician but contended since the compensation award did not include them, he was entitled to recover damages from the physician for the pain and suffering, and anguish of mind and nervous shock directly and proximately caused by the defendant's negligent treatment and "for any permanent injury or deformity, mortification, disfigurement or future power to earn wages." The trial court sustained a motion to enter judgment on the plead-

ings for the physician, and the workman appealed to the Supreme Court of Missouri, division 1.

The Supreme Court rejected the workman's contention. It could find nothing in the wording of the Missouri workmen's compensation act to justify a departure from the general rule that a workman who has received compensation under a workmen's compensation act cannot recover damages from a physician for an alleged aggravation of his industrial injury due to the negligent treatment of the physician. The Missouri workmen's compensation act by its very terms, said the Supreme Court, provides that "the rights and remedies herein granted to an employee, shall exclude all other rights and remedies of such employee on account of such accidental injury." Even though the section referred to proceeds thereafter in the very same sentence to provide "except such rights and remedies as are not provided for by this chapter," the court held that the workman had been fully compensated by the award. The judgment of the trial court in favor of the physician was accordingly affirmed.—*Hanson v Norton (Mo)* 103 S W (2d) 1

Accident Insurance Death from Ether as Constituting Death by Accidental Means—The Metropolitan Life Insurance Company, under two insurance policies issued to the insured, promised to pay double benefits if the insured's death was the result "directly and independently of all other causes, of bodily injuries sustained through external, violent and accidental means," but excluded death caused directly or indirectly or wholly or partially by disease or bodily or mental infirmity. The insured died while undergoing an operation for the removal of his tonsils. The insurance company refused to pay the double benefits, the beneficiary obtained a judgment in the superior court of Cook County, and the company appealed to the appellate court of Illinois, third division, first district.

The physician who performed the tonsillectomy testified that the insured's death was due to an idiosyncrasy to ether that caused respiratory paralysis. The coroner's physician of Cook County testified that he performed an autopsy on the body and found marked fatty changes in the liver, a moderate hypertrophy of the heart muscle and a passive congestion of the spleen and kidneys. In the opinion of this witness, the insured's death was due to degenerative changes of the heart muscle plus "surgical shock and anesthesia." Other physicians testified that the insured came to his death as a result of the combined effects of preexisting pathologic conditions and the administration of ether. In the opinion of the appellate court, the evidence was clear that the "means" through which the insured lost his life was not accidental. The insured voluntarily submitted to the administration of the anesthetic. There was no claim that the operation was unskilfully performed, nor was there any evidence that the anesthetic was not properly and skilfully administered. The preponderating weight of evidence indicated to the court that the insured was suffering from disease which directly contributed to his death. The evidence showed, therefore that the death was not the result "directly and independently of all other causes of bodily injuries sustained through external, violent and accidental means." The judgment of the superior court was reversed and judgment entered against the plaintiff.—*Ebbert v Metropolitan Life Ins Co (Ill)* 7 N E (2d) 336

Society Proceedings

COMING MEETINGS

American Society of Tropical Medicine New Orleans Nov. 30 Dec 3
Dr. N. Paul Hudson Dept of Bacteriology Ohio State Univ
Columbus Ohio Secretary
Society for the Study of Asthma and Allied Conditions New York Dec
11 Dr. W. C. Spain 116 East 53d St New York Secretary
Society of American Bacteriologists Washington D C Dec 22 30
Dr. I. L. Baldwin College of Agriculture University of Wisconsin
Madison Wis Secretary
Society of Surgeons of New Jersey Trenton November 20 Dr. Walter
B. Mount 21 Plymouth Street Montclair Secretary
Southern Medical Association New Orleans Nov. 30 Dec 3 Mr. C. I.
Foran Empire Bldg Birmingham Ala Secretary
Southern Surgical Association Birmingham Ala Dec 7 9 Dr. Alt
Ochsner 1430 Tulane Ave New Orleans Secretary
Western Surgical Association Indianapolis Dec 3-4 Dr. Alt
Montgomery 122 South Michigan Blvd Chicago Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

31 1182 (Sept.) 1937

- Theory of Developmental Physiology of Malignant Tumors A Fischer, Copenhagen Denmark—p 1
Diagnosis of the Krukenberg Tumor Angeline Simecek Prague, Czechoslovakia—p 21
*Study of Fatal Cases of Cancer of Scrotum from 1911 to 1935 in Relation to Occupation with Especial Reference to Chimney Sweeping and Cotton Mule Spinning S A Henry Whitehall London England—p 28
Resistance Factors Affecting Transplantable Neoplasms T Bischoff M Louisa Long Georgena Clarke and Harriet Benson Santa Barbara Calif—p 58
Influence of Inducing Drastic Changes in Body Metabolism on Growth of Sarcoma 180 F Bischoff and M Louisa Long Santa Barbara Calif—p 67
Urine of Pregnancy and Tumor Growth (Sarcoma 180) F Bischoff L C Maxwell and M Louisa Long Santa Barbara Calif—p 72
Studies on Relation Between Tumor Susceptibility and Heredity VI Lung Tumors in Mice with Respect to Phenomenon of Maternal Influence Clara J Lynch New York—p 77
Observations on Histogenesis of Ovarian Tumors Produced in Mice by X Rays J S Butterworth New York—p 85
Liver Degeneration and Cirrhosis Produced by 1 2 5 6 Dibenzanthracene A Claude New York—p 100
*Further Observations on Macronucleolus of Cancer W C MacCarty Rochester Minn—p 104

Study of Fatal Cases of Cancer of Scrotum—Henry studied the relation of cancer of the scrotum to occupation of the 1,487 men who had been certified medically as having died of the disease between 1911 and 1935. Of the 1,487 fatal cases coded as cancer of the scrotum by the Registrar General for England and Wales the disease was defined as epithelioma in 903, carcinoma in 362, cancer in 206, rodent ulcer in three, sarcoma in twelve and teratoma in one. The two occupations dealt with in the study are those of chimney sweeps and cotton mule spinners. There were 147 fatal cases of cutaneous cancer in chimney sweeps from 1911 to 1935, of which forty-four were on cutaneous sites other than the scrotum. A comparison of the deaths from cutaneous cancer in sweeps in each decennial age group from 25 shows that prior to 45 years of age the only deaths from cutaneous cancer are those from cancer of the scrotum. The age of the 103 chimney sweeps who died of cancer of the scrotum between 1911 and 1935 varied from 34 to 84 years. The excessive occurrence of cancer of the scrotum in cotton mule spinners was first brought into prominence in 1922 by the publication of Southam and Wilson, which dealt with 141 cases of cancer of the scrotum. In the present series there were 345 deaths from cancer in cotton mule spinners. In fourteen cases additional sites were stated on the death certificate apart from secondary involvement of the inguinal or pelvic glands, liver or peritoneum. A comparison of the deaths from cutaneous cancer in cotton mule spinners in each decennial age group from 25 years shows that each group from 25 to 75 contributes deaths from cancer on cutaneous sites both scrotal and nonscrotal. The percentage of deaths from cancer of the scrotum to the total for cutaneous cancer is at its minimum of 25 at the age of 25 to 34, rises to 87 at the age of 45 to 54, and falls to 647 at the age of 75 to 84. From the age of 85 one death from scrotal cancer has occurred but, contrary to the case of chimney sweeps, no death from cutaneous cancer other than on the scrotum has as yet arisen. There were 136 cases of cancer of the scrotum and thirty-six cases of cancer at another cutaneous site in cotton mule spinners from 1921 to 1925 inclusive, 281 and 145 respectively from 1926 to 1930, and 172 and 107 from 1931 to 1935.

Observations on Macronucleolus of Cancer Cells—McCarty summarizes the results of sixteen observers working independently which abundantly substantiate the fact that

malignant cells possess larger nucleoli than all other cells of any particular organ. Two other observations worthy of mention are that there are intranucleolar bodies evident within the large nucleoli that should not be dismissed too readily as vacuoles or harmless accidental lipid bodies, and George A Wyeth, working with darkfield illumination and incident light, found a minute active, motile body in perfectly fresh, unfixed cancers of the breast. The question arising is whether there is any relation between the enlarged nucleolus, the intranucleolar bodies and the fairly constant active motile body.

American Journal of Psychiatry, New York

94 1250 (July) 1937

- Perspectives in Psychiatry C M Campbell Boston—p 1
C Macfie Campbell MA BSc MD President 1936 1937 A
Biographic Sketch W L Russell White Plains, N Y—p 15
Urinary Phosphate of Night Urine in Mental Disease Note W M Bachinski and J J Rae Brandon Manit—p 19
Effect of Benzidine Sulfate on Certain Abnormal Mental States P G Schube M C McManamy, C E Trapp and A Myerson Boston—p 27
Definition of Childhood in Psychiatric Literature C Bradley East Providence R I—p 33
Six Years Experience with Narcosis Therapy in Psychiatry H D Palmer and F J Braceland Philadelphia—p 37
Hypertroidism and Personality W T Brown and E F Gildea New Haven Conn—p 59
Significance of Special Reading Disability in Mentally Handicapped Problem Children T G Hegge Northville Mich—p 77
Psychiatric Manifestations of Hypoglycemia E J Kepler and F P Moersch Rochester Minn—p 89
Methodical Use of Hypoglycemia in Treatment of Psychoses M Sakel Vienna Austria—p 111
Report of Hypoglycemic Treatment in New York State Hospitals J R Ross Wingdale N Y—p 131
Experience with Hypoglycemic Treatment of Schizophrenia S Katzenelbogen H Harms and D A Clark Baltimore—p 135
Further Experiences at Bellevue Hospital with Hypoglycemic Insulin Treatment of Schizophrenia J Wortis K M Bowman L L Orenstein and I J Rosenbaum New York—p 153
Experiences with Hypoglycemic Shock Treatment of Schizophrenia G A Young R H Young and L Roucek Omaha—p 159
Effect of Hypoglycemic Therapy on Psychotic Process B Glueck New York—p 171
The Problem of Insulin Shock H J John Cleveland—p 175
Electroencephalogram of Schizophrenics During Insulin Treatments The Delta Index as Clinical Measure H Hoagland D E Cameron and M A Rubin Worcester Mass—p 183

Am J Roentgenol & Rad Therapy, Springfield, Ill

38 389 532 (Sept.) 1937

- Prostatic Hypertrophy C F Geschickter Baltimore—p 389
*Esophageal Varices A Oppenheimer Beirut Lebanon Syria—p 403
Roentgen Diagnosis and Therapy of Syringomyelia E B Gurevitch G B Fom n and P B Shklovskia Moscow U S S R—p 415
Experimental Studies on Gastric Physiology in Man III Study of Pyloric Control Role of Milk and Cream in the Normal and in Subjects with Quiescent Duodenal Ulcer J Gershon Cohen and H Shay Philadelphia—p 427
Rate of Deposition of Thorotrast in Human Liver and Spleen W M Yater Washington D C—p 447
Adolescent Sacro-Iliac Joints Their Normal Development and Their Appearance in Epiphysitis E N Cleaves Boston—p 450
Ostitis Fibrosa Cystica Due to Parathyroidism H Hirsch New York—p 457
Cinefluorography W H Stewart W J Hoffman and T H Ghiselin New York—p 465
Effects of Roentgen Irradiation on Trichinosis in Albino Rat J E Semrad Chicago—p 470

Esophageal Varices—Oppenheimer bases his remarks on the observations made on healthy students and on about 100 patients with esophageal varices, all of whom were thoroughly examined clinically and roentgenologically. Anatomically, the x-ray observations vary greatly with the stage of the disease. Three groups stand out: (1) the early stage, marked by a slight and diffuse venous congestion resulting in moderate broadening of the rugae of the lower part of the esophagus; (2) the beginning of the dilatation of larger individual veins which emerge from the submucosa into the mucosal relief marked by small rounded defects seen in the relief of the lower fifth of the tube and (3) generalized enlargement of numerous veins which encroach on the mucosa. In this period the typical vermiform negative shadows predominate. Varices, not being solid anatomic formations, vary in caliber according to influences acting on their filling. Definite variations in size and extent are produced by peristalsis, especially stripping, and by mechanical pressure—that, for example, of a large bolus. In

either case, blood is moved into the lower vessels. In early portal congestion, the blood can still pass into the abdominal veins. Later it is squeezed from the upper varices into lower ones, overfilling the latter. This mechanism, in early stages, makes esophageal varices invisible and, in advanced stages, only a part of the whole extent is visualized. X-ray examination generally does no more than confirm the clinical diagnosis in advanced stages, while in early congestion the clinical recognition often depends on positive X-ray signs. It is necessary, therefore, to demonstrate the mucosal relief of the esophagus when unaltered by peristalsis or mechanical compression. Optimal visualization is present during the short interval between swallowing and stripping. Esophageal varices fill on inspiration. Hence the film should be exposed during forced inspiration. The retardation of the passage through the esophagus varies between a few seconds, in early congestion, and several hours, in terminal stages. It is often due only to mechanical obstruction by the varicose mass. But, in early and in terminal stages, various functional disturbances affecting the cardia also cause esophageal stasis.

Annals of Internal Medicine, Lancaster, Pa.

11 429 574 (Sept.) 1937

- *Nutritional Factors in Graves Disease J H Means S Hertz and J Lerman Boston—p 429
- Study of Diagnosis and Treatment of Lobar Pneumonia According to Types and Specific Serum Therapy J E Benjamin M Blankenhorn J M Rueggeger and Fannie A Senior Cincinnati—p 437
- Some Clinical Caprices of Hodgkin's Disease W S Middleton, Madison Wis—p 448
- The Internist and the Syphilis Control Program H J Morgan Nashville Tenn—p 469
- Prognosis in Tuberculosis F M Pottenger Monrovia Calif—p 474
- Scarlet Fever J V Cooke St Louis—p 484
- Production of Extrasystoles by Means of Central Nervous System C Korth Berlin Germany—p 492
- Importance of Embolism as Complication of Cardiac Infarction G Blumer New Haven Conn—p 499
- Kapok and Molds Important Combination H C Wagner and F M Rackemann Boston—p 505
- Class Method in Treatment of Essential Hypertension R W Buck, Boston—p 514
- Paroxysmal Ventricular Tachycardia Report of Three Cases Mecholy Used and Ineffective in Two N S Stern Memphis Tenn—p 519
- Ottmar Rosenbach Pioneer in Development of Concept of Functional Disease and Functional Diagnosis in Internal Medicine H Morrison Boston—p 527

Nutritional Factors in Exophthalmic Goiter—A few years ago Hertz was impressed with the number of patients with toxic goiter who gave histories of having started their thyrotoxic symptoms at the conclusion of a reducing program for obesity. After the desired amount of weight had been lost the diet was increased, but the patient found that loss of weight continued, perhaps at an accelerated rate. Along with this, nervousness, tremor and other symptoms of thyrotoxicosis would make their appearance. Means and his associates have encountered thirty-five such cases. In fourteen of these the prethyrotoxic loss of weight was occasioned by reducing cures and in the remainder it was due to a variety of conditions, such as restriction of diet in the treatment of ulcer, ulcerative colitis, diabetes and other diseases leading to malnutrition. The authors warn physicians and patients against too vigorous reducing cures for obesity, and in the preparation of the thyrotoxic patient for surgical intervention urge that the possibility of nutritional disturbances be considered and, if found, that an attempt be made to correct them. The manifestations of nutritional disturbance, which may be found in thyrotoxic patients, include general inanition changes in musculature, skeleton, hematopoietic system and very likely in the heart and psyche. While these changes may be incidental, they are of sufficient frequency to warrant consideration in the complete management of exophthalmic goiter. The methods of correcting these defects include not only a high caloric diet for relieving general malnutrition but one high in vitamins and minerals as well. For the high caloric intake the chief dependence should be placed on carbohydrate. Excessive protein is undesirable because through its specific dynamic action protein raises metabolism. Fat may be given to whatever extent the patient's appetite demands it. The malnourished thyrotoxic and the psychotic patients as well as those with cardiac insufficiency are considered poor operative risks.

Archives of Neurology and Psychiatry, Chicago

38 667 912 (Oct.) 1937

- Meningiomas Origin Divergence in Structure and Relationship to Contiguous Tissues in Light of Phylogenesis and Ontogenesis of the Meninges with Suggestion of Simplified Classification of Meningeal Neoplasms J H Globus New York—p 667
- Pathologic Features of Multiple Sclerosis and Allied Conditions G B Hassin Chicago—p 713
- *Proposed Mechanism of Emotion J W Papez Ithaca N Y—p 723
- *Mode of Onset of Epilepsy J L Fetterman and V R Hall Cleveland—p 744
- Sympathectomy in Man Its Effect on Electrical Resistance of the Skin C P Richter and M Levine Baltimore—p 756
- Association of Carotid Sinus Reflexes with Syncope and Convulsions Report of Four Cases A S Freedberg and L H Sloan Chicago—p 761
- Necrotizing Encephalitis Simulating Tumor of the Brain Clinically and Due to Necrotizing Angitis A Clinicopathologic Report A A Levy Chicago—p 775
- Water Metabolism in Relation to Convulsions T T Stone and H Chor Chicago—p 798
- Psychoses Complicating Recovery from Extraction of Cataract P W Preu and F P Guida New Haven Conn—p 818
- Surgical Treatment of Pineal Tumor E A Kahn Ann Arbor Mich—p 833

Mechanism of Emotion—Papez attempts to point out various anatomic structures and correlated physiologic symptoms which, taken as a whole, deal with the various phases of emotional dynamics, consciousness and related functions. It is proposed that the hypothalamus, the anterior thalamic nuclei, the gyrus cinguli, the hippocampus and their interconnections constitute a harmonious mechanism which may elaborate the functions of central emotion as well as participate in emotional expression. It is an attempt to allocate specific organic units to a larger organization dealing with a complex regulatory process. The evidence presented is mostly concordant and suggestive of such a mechanism as a unit within the larger architectonic mosaic of the brain. The structures described here are usually represented as dealing with some phase of the olfactory function. There is no clinical or other evidence to support this view. Emotion is such an important function that its mechanism, whatever it is, should be placed on a structural basis. The organization presented here meets adequately the physiologic requirements proposed by Cannon and Bard with respect to the theory of emotion based on diencephalic cortical processes. It is also in agreement with the observations of Dandy that the seat of consciousness is located somewhere near the midline, between the limits set by the corpus callosum and the basal structures of the brain.

Mode of Onset of Epilepsy—Fetterman and Hall observed 160 patients who had had convulsive seizures. In practically every instance an extensive history had been obtained and neurologic, X-ray and laboratory studies were made. Of the patients 102 were considered as belonging to the group with so called idiopathic, or cryptogenic, epilepsy, fifty one to the group with the organic type and seven to the group with the psychogenic type. The mode of onset was correlated with the various features, such as etiology, age at onset, intelligence quotient, family history, eventual severity and response to therapy. The onset occurred abruptly in from 75 to 80 per cent of the cases and mildly in the remainder. Except for the alcoholic group there was remarkable uniformity in this ratio for all etiologic types, the organic and the idiopathic group showing apparently the same percentages of violent and of mild onsets. There was a slight tendency for the lighter modes to occur in young persons. Thus, in 48 per cent of the cases in which the onset was insidious the disease began in the first decade of life, as compared with only 26 per cent in which there was abrupt, violent onset. The investigation shows the significance of early attacks, either abrupt or mild for the development of later chronic epilepsy. There was no important correlation between the mode of onset and the intelligence quotient of the patient. There was only the slightest tendency for milder forms of onset to occur in persons with higher intelligence. This variation may well be erroneous. The mildness of the onset is not a measure of the eventual severity of the epilepsy. Regularly, persons who began with momentary stares or transient visceral sensations later experienced diminution in consciousness and finally, complete loss of consciousness with all the convulsive features of epilepsy. In some instances there was a tendency for epilepsy with a mild

onset to remain mild throughout the course of the disease. There was no important correlation between the severity of onset and the family history.

Arch of Physical Therapy, X-Ray, Radium, Chicago

18 545 608 (Sept.) 1937

- Physiologic Effects of Low Intensity Short Wave Radiation E Weissenberg Vienna Austria—p 551
Delayed Union of Fractures Analysis of Cases A F Voshiell Baltimore—p 561
Bone Necrosis in Intra Oral Cancer D E Ehrlich New York—p 565
Further Studies in Ultraviolet Treatment of Erysipelas M E Knapp, Minneapolis—p 572
Short Waves as a Pyretogenic Agent A Halphen and J Auclair Paris France—p 576
Proctologic Electrosurgery I M Brenner New York—p 579
Iontophoresis of Acetyl Beta Methylcholine Chloride in Peripheral Vascular Diseases T Cohn and S Benson Chicago—p 583

Endocrinology, Los Angeles

21 587 710 (Sept.) 1937

- Functional Efficiency of Transplanted Adrenal Cortical Tissue L C Wyman and Caroline Tum Suden Boston—p 587
Use of Estrin in Treatment of Eclampsia E Shute London, Ont—p 594
Complete and Incomplete Estrogenic Hormones Arising from Different Sites in Rat's Ovary S C Freed and S Soskin Chicago—p 599
Comparative Action of Testosterone Compounds of Estrone and of Combinations of Testosterone Compounds and Estrone on Anterior Hypophysis J M Wolfe Nashville Tenn, and J B Hamilton Albany N Y—p 603
Spermatogenic and Secretory Function of Gonads of Hypophysectomized Adult Rats Treated with Pituitary FSH and LH R O Greep and H L Fevold Cambridge Mass—p 611
Quantitative Assay of "Follicle Stimulating" Substances L Levin and H H Tyndale New York—p 619
Epithelial Growth Caused by Stimulation with Various Smear Methods as Demonstrated by Mitotic Stasis with Colchicine P V Rogers and E Allen New Haven Conn—p 629
Ovaries Secrete Male Hormone III Temperature Control of Male Hormone Output by Grafted Ovaries R T Hill New Haven Conn—p 633
Acceleration of Rate of Passage of Fertilized Ova Through Fallopian Tubes of Mice by Massive Injections of Estrogenic Substance H O Burdick and Rae Whitney Alfred N Y—p 637
*Differential Diagnosis of Pseudocryptorchidism and True Cryptorchidism J B Hamilton and G Hubert Albany N Y—p 644
Treatment of Sexual Underdevelopment with Synthetic Male Hormone Substance J B Hamilton Albany N Y—p 649
Testis Hormone in Relation to Age C W Hooker Durham N C—p 655
Biologic Effects of Thymectomy Accruing Retardation in Growth and Development in Successive Generations of Thymectomized Rats N H Einhorn and L G Rowntree Philadelphia—p 659
Studies on Physiology of Lactation VII Lactation in Thyroidectomized Rats and Guinea Pigs W O Nelson Detroit, and C E Tobin—p 670
*Comparison of Ketosis Developed During Fasting by Obese Patients and Normal Subjects E M Mackay and J W Sherrill San Diego Calif—p 677

Pseudocryptorchidism and True Cryptorchidism—Hamilton and Hubert devised a method for the differentiation of true from false cryptorchidism. The rationale is that of obtaining relaxation of those muscles the contraction of which has caused retraction of the testis, if this does not in itself result in the return of the testis to the scrotum, manual palpation is employed. Such relaxation of cremasteric and other muscles is obtained by a general method of approach and by direct application of heat (hot water bag) to the groin scrotum and perineum, the patient lying with the legs apart. The temperature of the water in the bag is maintained at about 115 F. The specific procedure of thermal applications warms the muscles whose contraction causes retraction of the testis and interferes with the return of the testis normally or even when aided by manual pressure. Heating results in relaxation of these muscles, hence the testis may reenter the scrotum, either spontaneously or following increase in the abdominal pressure. When spontaneous descent does not occur, palpation is employed. If the testis cannot be passed into the scrotum by gentle manipulation when the muscles are relaxed, the testis is considered to all intents and purposes to be truly cryptorchid. Precautions should be observed to avoid exciting the patient or inciting the active cremasteric reflexes. This technic reveals the large percentage of pseudocryptorchid testes that are considered true cryptorchidism by usual tests, even by physicians experienced in the handling of children. Of the sixteen cases referred to the authors by pediatricians, all but six presented a condition of spastic retraction.

Ketosis Developed During Fasting—New experiments along with data from the literature were used by MacKay and Sherrill for a comparison of the extent of fasting ketosis in obese and nonobese subjects. They conclude from the data that unless an obese subject has a fasting ketosis a great deal lower than the average normal person he will probably develop a higher degree of ketosis than the nonobese individual. Obese patients who have less of a fasting ketosis than normal subjects are probably suffering from a different type of obesity, possibly related to disturbances in the endocrine system. This failure to develop a ketosis brings up the question of locked fat in connection with the fat deposits in certain cases of obesity. Because of the ketogenic activity of certain anterior pituitary extracts and their ability to move fat from the stores of the body to the liver, the functional state of this gland in obesity must be considered. A short fast is a useful therapeutic agent for many obese patients and under the proper conditions is not difficult to carry out. The subjects from whom the data were obtained did not have their diet carefully controlled previous to fasting. There is considerable evidence that in further work of this kind rigid control of the preceding diet would be desirable.

Illinois Medical Journal, Chicago

72 193 284 (Sept.) 1937

- Poliomyelitis Review of 139 Patients A L Hoyne Chicago—p 217
Surgical Management of Acute Appendicitis and Its Complications in Children E M Miller and E C Turner Chicago—p 222
Difficulties in Diagnosis D Kirby Champaign—p 227
The Radiologic Appendix G M Landau and R A Arens Chicago—p 229
Diagnosis of Acute Appendicitis in Children H W Elghammer Chicago—p 232
Diagnostic Difficulties in Appendicitis L H Sloan Chicago—p 235
Postoperative Complications of Acute Appendicitis and Their Treatment C Rich Decatur—p 237
Whooping Cough Diagnosis and Prevention L Sauer Evanston—p 239
Treatment of Spinal Cord Injuries L Davis Chicago—p 240
Immediate Treatment of Compound Injuries M L Mason Chicago—p 249
*Hypervitaminosis D A W Hubbard, Minneapolis—p 253
Diphtheria Prevention Municipal Problem N C Bullock Rockford—p 257
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Treatment of Nonconvulsive Toxemia of Pregnancy at the Chicago Lying In Hospital W J Dieckmann Chicago—p 266
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Irradiation or Surgery in Cancer of Larynx T C Galloway Evanston—p 276
Treatment of Hypogenitalism in the Male W O Thompson N J Heckel A D Bevan and Phebe K Thompson Chicago—p 279

Hypervitaminosis D—Hubbard reviews the literature pertaining to the possible effects of toxic dosage, vitamin D poisoning and hypervitaminosis D that may be brought about by massive doses of vitamin D in the treatment of allergic and arthritic conditions. He pleads that a measure of caution be exerted by those physicians who do not have adequate facilities for the observation and control of patients suffering from these conditions and in whom a trial of this therapy might be considered. The advocates for any particular type of therapy extol its virtues but have a tendency toward minimizing any deleterious effects. Hypervitaminosis D may cause cell destruction and calcification which may become involved beyond repair, leading to death. The factors influencing the severity of hypervitaminosis D are the state of the renal pathologic condition previous to massive vitamin D administration, the presence of a sensitive colon or intolerance to any dosage, the proportionate available supplies of calcium and phosphorus and the proportionate available supply of the vitamins having a cooperative or synergistic action vitamins A, B complex, C and F. In the absence of better diagnostic aids for the determinations of hypervitaminosis D than an inexperienced patient's self observation of distress, it behooves physicians to use extreme caution in making use of this therapy. It is also possible that harm may result from indiscriminate vitamin self medication on the part of the public. Vitamin D preparations of all potencies have been greatly overemphasized and oversold to the public. The overcommercialization of these products, the undesirable qualities, which are now being recognized along with their beneficent properties, may have most unfortunate repercussions as time goes by.

Journal of Clinical Investigation, New York

16 685 832 (Sept) 1937

Changes in Vasomotor Reaction Associated with Glomus Tumors S J Stabins J J Thornton and W J M Scott New York—p 688
*Daily Urinary Excretion of Estrogenic and Androgenic Substances by Normal Men and Women T F Gallagher D H Peterson R I Dorfman A T Kenyon and F C Koch Chicago—p 695
*Urinary Excretion of Androgenic and Estrogenic Substances in Certain Endocrine States Studies in Hypogonadism Gynecomastia and Virilism A T Kenyon T F Gallagher D H Peterson R I Dorfman and F C Koch Chicago—p 705
Nutritional Edema in the Dog V Development of Deficits in Erythrocytes and Hemoglobin on a Diet Deficient in Protein A A Weech M Wollstein and E Goettsch New York—p 719
*Loss of Minerals Through Skin of Normal Humans When Sweating Is Avoided R H Freyberg and R L Grant Ann Arbor Mich—p 729
Adjustment of Flow of Tissue Fluid in Presence of Localized Sustained High Venous Pressure as Found with Varices of the Great Saphenous System During Walking H K Beecher Boston—p 73
Coagulation Defect in Hemophilia Effect in Hemophilia of Intramuscular Administration of a Globulin Substrance Derived from Normal Human Plasma F J Pohle and F H L Taylor Boston—p 741
Opsonocytaphagic Test in Children with Pertussis and in Children Vaccinated with Haemophilus Pertussis Antigens Charlotte Singer Brooks and J J Miller Jr San Francisco—p 749
Plasma Cholesterol Saturation in Patients with Hypertension Note on Preparation of Glass Filters for Microfiltration of Cholesterol Diglutinate R F Holden Jr New York—p 765
Studies on Mechanism of Proteinuria E H Keutmann and S H Bassett Rochester N Y—p 767
Studies in Physiology of Blood Vessels in Man Apparatus and Methods I Sensitive Plethysmograph for Portion of the Finger R H Turner New Orleans—p 777
Id II Method for Determination of Volume of Soft Tissue About Terminal Phalanx of the Human Finger W A Sodeman New Orleans—p 787
Id III Some Effects of Raising and Lowering the Arm on the Pulse Volume and Blood Volume of Human Fingertip in Health and in Certain Diseases of Blood Vessels R H Turner G E Burch and W A Sodeman New Orleans—p 789
Clinical Study of Action of Ten Commonly Used Drugs on Cardiac Output Work and Size on Respiration on Metabolic Rate and on the Electrocardiogram I Starr C J Gamble A Margolies J S Donald Jr N Joseph and E Eagle Philadelphia—p 799
Opsonocytaphagic Reaction of Blood in Pertussis W L Bradford and Betty Slavin Rochester N Y—p 825
Effect of Immune Blood on Opsonocytaphagic Power of the Blood in Pertussis W L Bradford R Mikell and Betty Slavin Rochester N Y—p 829

Daily Excretion of Estrogenic and Androgenic Substances—Gallagher and his associates outline a quantitative method for the extraction of androgenic and estrogenic materials from the urine. They applied the method on the urines of four normal men and four normal women over a continuous period of from thirty-nine to forty-five days for the men and over a complete menstrual cycle for the women. There were marked fluctuations in the daily urinary excretion of androgens and estrogens in the normal men and women. There was no definite evidence of a monthly cycle in the excretion of either androgens or estrogens in the normal men. In the women the excretion of estrogens was characteristically low during the menstrual flow and rose during the intermenstruum with a double peak in certain instances. The average daily excretions of androgens were from 63 to 68 units for the men and from 42 to 56 units for the women, calculated as international androgen units. The average daily excretions of estrogens, calculated as micrograms of theelin, were from 9 to 12 micrograms for the men and from 18 to 36 for the women. The rates of excretion of androgenic and estrogenic substances do not seem to bear any relation to each other in either sex.

Excretion of Androgenic and Estrogenic Substances—Kenyon and his colleagues observed that two castrated men excreted only traces of androgenic (comb-growth promoting) and estrogenic substances. Seven eunuchs excreted on the average a third of the normal amount of androgens, overlapping the normal range on occasion. The output of estrogens was also low. One patient with hypopituitarism excreted only small amounts of both substances. Of four patients with gynecomastia none excreted an excess of estrogenic material. The androgens varied from none at all to a normal amount. Sixteen patients with virilism excreted as a rule normal amounts of androgenic material. The great excess of 480 international units per day was found in one case of carcinoma of the adrenal cortex. The urine of this patient possessed the spectrographic

properties of testosterone, androstenedione or cholestenone rather than of androsterone. It was similar in this respect to certain compounds derived from the adrenal cortex.

Loss of Minerals Through Skin When Sweating Is Avoided—With the exception of the work of McCance in none of the literature did Freyberg and Grant find any information regarding the cutaneous loss of minerals from the healthy adult man who is not sweating. They therefore experimented on two healthy adult men who went about their usual laboratory duties with special precautions only to keep themselves cool enough to prevent sweating. Subject B over a period of seventy-seven days excreted an average of 37 mg of sodium daily. The same subject lost 71 and 131 mg of sodium daily through the skin during two separate experiments. These values illustrate the relative importance of measuring the sodium lost by the two paths of excretion. During the low intake of sodium chloride, particularly, cutaneous excretion cannot be disregarded, for in this experiment more than 14 per cent of the total urinary and cutaneous sodium is lost through the skin. This experiment also shows that the loss of sodium, chloride and other minerals through the skin does not vary with the intake of sodium chloride or with the amount in the urine. Accordingly a twelve hour experiment was carried out while subject B lay nude on a rubber sheet in a room in which the temperature was maintained between 77 and 82.4 F. During this period there was no detectable moisture on the skin. The insensible loss of weight for this period was 397 Gm, 60 Gm was lost as the result of the difference in weight between outgoing carbon dioxide and incoming oxygen, and the remaining 335 Gm was water vaporized from the lungs and skin. About two thirds of the water vapor comes from the skin, thus about 225 Gm of water was vaporized from the skin. It carried with it 32 mg of sodium, 47 mg of potassium, 53 mg of chloride and 34 mg of sulfate sulfur. The insensible loss of water being considerably greater when the subject is up and about, it is obvious that little if any of the twenty four hourly values of the substances studied could have come from sweat or sources other than the skin.

Journal of General Physiology, New York

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Visual Adaptation and Chemistry of the Rods G Wald and Anna Betty Clark Cambridge Mass—p 93

Journal of Pharmacology & Exper Therap, Baltimore

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Influence of Vitamin C Deficiency on Resistance of Guinea Pigs to Diphtheria Toxin Glucose Tolerance A Sigal and C G King Pittsburgh—p 1
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Relative Effectiveness of Atropine and Neotropin on Gastric and Colonic Motility of Unanesthetized Dog J P Quigley Cleveland—p 30
*Does Digitalis Protect Against Diphtheria Toxin? C W Edmunds and R G Smith Ann Arbor Mich—p 37
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Toxicity of Orally Ingested Arsenic Selenium Tellurium Vanadium and Molybdenum K W Franke and A L Moxon Brookings S D—p 89
Comparative Intravenous Toxicity of Some Monohydric Saturated Alcohols A J Lehman and H W Newman San Francisco—p 103

Does Digitalis Protect Against Diphtheria Toxin?—In view of the importance of the correct treatment of the circulatory collapse which occurs in diphtheria and the results obtained by Myers in his use of digitalis Edmunds and Smith further examined the subject since digitalis has been shown

by many workers to produce cardiac changes that would seem to be detrimental in diphtheria rather than beneficial. The present study was undertaken to determine the degree of protective action, if any, of digitalis, ouabain and strophanthin against diphtheria toxin. About 450 guinea-pigs were used. Daily administration of digitalis or the glucosides was begun, in some experiments, at the time of the toxin injection and continued for six injections, provided death did not ensue within that period. In other experiments the daily administration of digitalis or the glucosides preceded the injection of toxin by from five to thirteen days in order to detect a possible prophylactic action. In still other experiments previous treatment was discontinued at the time of the injection of toxin. The subcutaneous lethal doses of ouabain, strophanthin and tincture of digitalis were first determined in order that certain fractions of these doses might be used for purposes of prophylaxis or treatment. A preliminary series of experiments was carried out in which the protective action of ouabain and strophanthin was determined against varying doses of diphtheria toxin. The results indicate clearly, in contrast to the positive results of Myers with strophanthin, a complete absence of any protective effect from the use of this glucoside. The results with ouabain are also unfavorable to any view that the use of this glucoside is beneficial. In fact the percentage of recoveries is slightly higher with toxin alone than with toxin and ouabain. Myers' results with ouabain agree in general with these. In addition to the pharmacologic evidence, a pathologic study of the affected hearts failed to support the theory that protection was afforded

Laryngoscope, St Louis

47 615 706 (Sept.) 1937

Neural Mechanism of Hearing B. Nerve Deafness of Known Pathology or Etiology. Diagnosis of Occupational or Traumatic Deafness. Historical and Audiometric Study. C. C. Bunch. St. Louis—p. 615

Id. Deafness, from Drugs and Chemical Poisons. H. M. Taylor. Jacksonville, Fla.—p. 692

New England Journal of Medicine, Boston

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Chronic Idiopathic Ulcerative Colitis in Children. R. M. Smith. Boston—p. 541

The Management of Minor Complaints After Thyroidectomy. H. M. Clute and H. L. Albright. Boston—p. 547

Relation of Allergy to General Medicine. W. S. Burrage. Boston—p. 551

The Mandelic Acid Treatment of Urinary Tract Infections. F. H. Colby. Boston—p. 554

Hemolytic Streptococcus Meningitis. Report of Case with Recovery After Use of Sulfanilamide and Its Derivatives. J. Millett. Hempstead, N. Y.—p. 556

New York State Journal of Medicine, New York

37 1539 1618 (Sept. 15) 1937

Non-surgical Treatment of Pyloric Obstruction Resulting from Peptic Ulcer. Based on Series of Patients Observed from Three to Ten Years. H. A. Rafsky. New York—p. 1539

Shadows in the Mirror of Health. T. W. Todd. Cleveland—p. 1546

The Epileptic School Child. How May We Understand and Treat Him? F. L. Patry. Albany—p. 1553

Orbital Infections Due to Nasal Sinusitis. Study of 114 Cases. L. Hubert. New York—p. 1559

The Polycystic Kidney with Especial Reference to Complications and Treatment. J. A. Lazarus. New York—p. 1565

Corrective Supervised Exercises for Postural Defects. E. T. Wilkes and Elizabeth Just. Long Island City—p. 1570

Effects of So-Called Enzols on Normal Thyroid and Testicular Tissue. W. T. Pommerenke. Rochester—p. 1575

Diabetes Mellitus. Impotent Insulin a Factor in Supposed Insulin Fast. Diabetes. Report of Cases. H. M. Feinblatt and E. Ferguson. Brooklyn—p. 1577

Rubin Test with Fatality. C. Weitzman and M. Cohen. Brooklyn—p. 1582

Orbital Infections Due to Nasal Sinusitis—Hubert points out that orbital infections due to nasal sinusitis may extend into the orbits by direct extension from the diseased bony walls, which separate these sinuses from the orbital cavities, and by the venous blood stream, i. e., by a phlebitis of the veins of the various sinuses, which anastomose with the superior and inferior ophthalmic veins that supply the fatty cellular tissue of the orbits. All orbital infections can be classified in the following groups: (1) inflammatory edema of the eyelids with or without edema of the orbit, (2) subperiosteal abscess with (a) edema of the lids and orbit, (b) spread-

ing of the pus to the lids (erroneously called orbital abscesses), (3) orbital abscess, (4) severe and mild orbital cellulitis and (5) septic and aseptic(?) cavernous sinus thrombosis. In the first group the infection is confined to the nasal sinuses and there is only an inflammatory edema of the lids, which may become markedly swollen. Thirty-one patients belonging to the first group were admitted to the hospital as bed patients. Of these, twenty were successfully treated symptomatically, one had a lid incised, one had the middle turbinate removed and nine had external radical operations. There were five deaths in this group. In the second group the infection involves the bony wall and the periosteum and a collection of pus forms between them. There were forty-six such cases, in nine of which the pus was confined between the bone and the periosteum and in thirty-seven the pus involved the lids. All recovered after surgical treatment. The infection in the third group spreads into the orbital tissue proper either through the orbital wall and fascia or through the venous circulation. Of twenty-two patients, two died of meningitis and one of a brain abscess. In the fourth group the infection extends into the orbital tissues through the venous circulation, causing a phlebitis of the ophthalmic veins. Nine patients had severe orbital cellulitis, six of whom died of meningitis. There were two patients with a mild orbital cellulitis following a nasal infection. They were discharged cured after a few days of local treatment. In the fifth group the infection has extended from the ophthalmic veins or directly from the sphenoid sinus into the cavernous sinus. It is almost impossible to distinguish clinically such an orbital cellulitis from a cavernous sinus thrombosis, unless it is accompanied by an edema over the mastoid emissary. The difficulty in the clinical diagnosis is due to the fact that the signs which are supposed to be characteristic of it are not due to a thrombosis of the cavernous sinus alone but to a phlebitis of the ophthalmic veins. Both of the two cases of septic cavernous sinus thrombosis were fatal. The two patients who recovered were diagnosed as having aseptic cavernous sinus thrombosis. This diagnosis is of course doubtful.

Public Health Reports, Washington, D. C.

52 1329 1368 (Sept. 24) 1937

Cultivation of Rickettsiae of Rocky Mountain Spotted Fever in Vitro. Ida A. Bengtson—p. 1329

Cultivation of Rickettsiae of Endemic (Murine) and Epidemic (Euro-pean) Typhus Fever in Vitro. Ida A. Bengtson—p. 1336

Puerto Rico J. Pub Health & Trop Med, San Juan

13 1170 (Sept.) 1937

Studies on Schistosomiasis Mansoni in Puerto Rico. IV. Pathologic Anatomy of Experimental Schistosomiasis Mansoni in Rabbit and Albino Rat. E. Koppisch. San Juan—p. 1

*Renal Hyperparathyroidism Associated with Cushing's Syndrome. J. A. Pons. San Juan and A. M. Pappenheimer. New York—p. 115

Renal Hyperparathyroidism—Pons and Pappenheimer report a case in which the classic features of the Cushing syndrome were combined with those of renal hyperparathyroidism. Leaving aside the "pituitary" features—obesity with distended striae and hyperglycemia, the case fits into a group which one may term provisionally "renal hyperparathyroidism." The evidence is accumulating that long-standing renal disease is accompanied regularly by enlargement of the parathyroids and by increased functional activity of these glands. If there are still many obscure points in the renal-parathyroid relationship, the complexity is deepened by the fact that the patient presented all the characteristic clinical features of the Cushing syndrome. In view of the observations of other workers it was disappointing to the authors that their case showed neither a basophil adenoma nor hyalinization of the normal basophil elements. On the contrary, the basophils contained numerous well stained granules. Although the greater part of the gland was sectioned at necropsy, they cannot state with certainty that a small adenoma may not have been present. The rather massive ingrowth of cells into the posterior lobe, forming a fairly compact block of tissue, is of interest in connection with the view advanced by Cushing that such invasion is correlated with hypertension. They are not inclined to stress the finding of basophil cell masses in the pars nervosa as a possible factor in the production of hypertension or other symptoms. The posterior lobe cells and the basophils of the anterior lobe could

be sharply differentiated in their staining reactions, in that they contained no blue-staining granules. Since hyperplasia of the parathyroids and bone lesions characteristic of hyperparathyroidism are not characteristically associated with the Cushing syndrome, the authors incline to the view that the parathyroid enlargement and osteofibrosis of the bones in their case has resulted from the chronic renal disease rather than from some obscure pituitary stimulation. Further experimental studies, however, are needed to define more clearly the interrelation of pituitary, parathyroids and kidneys.

Surgery, St. Louis

2 327-492 (Sept.) 1937

- Popliteal Aneurysms as Cause of Peripheral Circulatory Disease with Especial Study of Oculomographs as Aid to Diagnosis F V Theis Chicago—p 327
- Distribution of Anhidrosis Following Interruption of Various Sympathetic Pathways in Man Grace M Roth Rochester Minn—p 343
- Operative Management of Fibrous Constricting Pericarditis V Schmieden and H H Westermann Frankfurt on Main Germany—p 350
- High Frequency Transmission of Stimulating Impulses H Newman F Fender and W Saunders San Francisco—p 359
- Some Aspects of Echinococcus Disease H R Dew Sydney Australia—p 363
- Malignant Tumors of the Throat C L Martin Dallas Texas—p 381
- *Study of Lipemia Curve Following Surgical Operations Under Ether Anesthesia W P Montanus A Ames and L G Herrmann Cincinnati—p 401
- Diagnosis and Surgical Treatment of Perforating Lesions of the Colon C F Dixon and H M Weber, Rochester Minn—p 411

The Lipemia Curve Following Ether Anesthesia—Montanus and his co-workers made a study of the twenty-four hour lipemia curve of twelve patients subjected to various surgical operations under ether anesthesia. They did not observe any typical curve pattern or tendency when compared with the curves obtained in twelve patients operated on under other forms of anesthesia. In none of the twenty-four patients studied did the lipemia curve project significantly beyond an arbitrary normal fasting lipemia range.

Surgery, Gynecology and Obstetrics, Chicago

65 433-592 (Oct.) 1937

- Some Aspects of Malignant Tumors of Kidney E Beer New York—p 433
- Gastroscopic Observations of the Postoperative Stomach J B Carey Minneapolis—p 447
- Blood Pressure in Skin Capillaries and Surgical Shock G Szantó Budapest Hungary—p 455
- Neo Synephrin Hydrochloride in Treatment of Hypotension and Shock from Trauma or Hemorrhage C A Johnson Chicago—p 458
- *Fractures in Children J D Bisgard and L Martenson Omaha—p 464
- Congenital Abnormalities Phocomelus and Congenital Absence of Radius L L Hill Jr Montgomery Ala—p 475
- An Endocrine Background of Toxemias of Late Pregnancy E Shute London Ont—p 480
- Hemorrhage into Pleural Cavity J R Head Chicago—p 485
- Subtotal Gastric Resection for Peptic Ulcer G Miller Montreal—p 489
- Development of Technique of Thyroidectomy Presentation of Method Used in University Hospital F A Collier and A M Boyden Ann Arbor Mich—p 495
- Carcinoma of Colon Treatment Depending on Location of Lesion M Behrend Philadelphia—p 505
- Accidents in Renal Surgery A E Goldstein Baltimore—p 515
- Pedicle Flap Patterns for Hand Reconstruction G W Pierce and G B O'Connor San Francisco—p 523
- Radical Operation for Cancer of Rectum with Preservation of Sphincter Muscle E Gehrels San Francisco—p 528
- Transvesical Closure of Vesicovaginal Fistulas Employment of the Young Technique for Inaccessible Vesicovaginal Fistulas M Douglass Cleveland—p 534
- *Cellulitis of Neck Requiring Tracheotomy G B New Rochester Minn—p 536
- Total Gastric Resection Experimental Study F Glenn New York—p 540
- Experiences of a Blood Transfusion Team R R Bates Chicago—p 545

Fractures in Children—Bisgard and Martenson discuss clinical and experimental studies relative to the influence of trauma on the epiphyseal cartilage. These cartilages, which are productive of all growth in the length of the long bones are responsive to many influences. Fractures in the long bones of children involve the epiphyseal cartilage in more than 10 per cent of cases. Deformities of clinical importance developed as a result of disturbances of growth in only six cases, or 25 per cent of the fractures in children less than 16 years of age.

These six cases represent only 12 per cent of fractures in which the epiphyseal cartilages were involved in the injury despite the roentgenologic evidence that in 50 per cent of these cases the injured epiphyseal cartilages fused prematurely or failed to resume completely normal growth activity. A child less than 16 years of age who sustains a fracture of a principal long bone is confronted with only a 25 per cent chance of having an important residual deformity, although he has a 20 per cent chance that the fracture will involve epiphyseal cartilage and if it does, a 50 per cent chance that an inconsequential disturbance of growth will result. Since deformities from abnormal growth appear months after a fracture has healed and continue to progress during the remainder of the period of growth every child with a fracture which involves the epiphyseal cartilage should be observed periodically for a year or more and his family warned of the possibility of this sequel. Another late complication is paralysis of the ulnar nerve, which develops as late as thirty years after a fracture involving the epicondyles of the humerus. In these cases the ulnar nerve becomes injured from impingement between the medial condyle and the olecranon as a result of the deviation deformity which results from malunion or from arrested growth from one of the epicondyles, particularly the external one. Infection, fixation and traumas are some of the factors, often unavoidable, that greatly increase the likelihood of disturbances of growth. The possibility of a disturbance of growth should be anticipated at the time of injury and the need of special consideration of the epiphyseal cartilage in the handling of fractures recognized.

Cellulitis of the Neck Requiring Tracheotomy—New cites five cases of cellulitis of the neck producing sufficient obstruction of the upper part of the respiratory tract to require tracheotomy. Three of these patients had a diffuse cellulitis and thyroiditis following infection of the upper part of the respiratory tract, one patient had exophthalmic goiter, thyroiditis and an abscess of one lobe and the isthmus of the thyroid, and the other patient had a diffuse cellulitis of the buttocks, a spreading cellulitis of both parotid regions and the neck, and pneumonia developed after a hysterectomy had been performed. Patients who have infections of the neck are treated with large, hot, moist dressings which should be changed every hour. If inflammation is present in the mouth or throat, hot irrigations also are used. If the patient is unable to take sufficient fluids by mouth, they are supplied through a Rehfuess tube passed through the nose into the stomach. If edema of the larynx occurs, inhalations of steam are used and, in cases in which it is indicated, an oxygen tent is employed. Irradiation is of definite value in the treatment of certain infections of the neck. The parotitis associated with upper abdominal operations is greatly benefited and is some times cleared up by the use of radium packs if used immediately after the onset of the infection. Certain diffuse boardlike infections of the neck have been entirely cleared up without drainage by the use of roentgen therapy. Drainage of the phlegmon is performed by means of intravenous administration of sodium ethyl (1 methyl butyl) thiobarbiturate, except in cases in which there is partial obstruction of the respiratory tract, in which a spray of ethyl chloride is employed. For drainage of a phlegmon of the neck when the upper portion of the respiratory tract is partially obstructed, a small incision is made in the skin over the point at which the phlegmon is becoming localized and a curved hemostat is passed into the pocket and spread. A fairly stiff cigaret drainage tube, 0.75 cm in diameter, is inserted and sutured to the skin with silk. Tracheotomy should always be performed early whether the cause of the respiratory obstruction is infection or neoplasm.

West Virginia Medical Journal, Charleston

33 437-484 (Oct.) 1937

- The Prevention of Heart Disease L F Bishop Jr New York—p 437
- Syphilis of Cardiovascular System C G Willis Huntington—p 44
- Vacuum Bottle for Infusions and Hypodermoclysis C B Wright, Huntington—p 449
- Childhood Appendicitis Theresa O Smith Weston—p 451
- Complications of Peptic Ulcer I C McGee Elkins—p 455
- A Resume of 100 Consecutive Simple Mastoidectomies J A Sewart Wheeling—p 462
- Basal Pulmonary Tuberculosis with Reference to Diagnosis and Treatment R A Burdette Morgantown—p 463
- Cutaneous Anthrax Case Report L R Dudney Isaban—p 469

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

34 165 244 (July Sept.) 1937

- Congenital Syphilis in Small Towns and Rural Districts C Rolleston —p 165
Obesity Following Chorea P R Evans —p 179
Generalized Vaccinia J D Rolleston —p 187

British Journal of Urology, London

9 215 326 (Sept.) 1937

- Treatment of Bladder in Spinal Injuries in War J Thomson Walker —p 217
Extra Urinary Causes of Urinary Obstruction G Parker —p 231
The Prostate and Endocrines Control Series R Clarke —p 254
Pitfalls in Laboratory Diagnosis of Urinary Tuberculosis Report of Address Given at Urologic Section of Royal Society of Medicine Herta Schwabacher —p 272

British Medical Journal, London

2 513 564 (Sept 11) 1937

- Influenza Four Years Progress C H Andrews —p 513
Epidemic Influenza Clinical Point of View C H Stuart Harris —p 516
Structure of Personality in Psychotherapy E Kretschmer —p 518
*Chemical Diagnosis of Early Pregnancy Method Based on Detection of Estriol in the Urine Jocelyn Patterson —p 522
Athletic Injuries of Knee Joint Excluding Cartilage Injuries W E Tucker —p 525

Chemical Diagnosis of Early Pregnancy—The test that Patterson describes requires at least 50 cc of early morning concentrated urine. The urine is tested for high acidity by treating a few drops of it with methyl red, and if acid to this indicator it is adjusted with alkali until it is no longer pink. A 50 cc sample is then heavily inoculated with *Bacillus coli* and incubated overnight. After incubation, while it is still warm, 0.5 Gm of sodium bisulfite is added. The specimen is shaken until the solid has dissolved completely and then it is allowed to stand for fifteen minutes. The partially decolorized urine is transferred to a 150 cc separatory funnel and extracted with two lots of 40 cc of ether. The combined ether extracts are washed with a little water and then well shaken with a 30 cc portion of 10 per cent sodium carbonate. The alkali layer having been discarded, this washing process is repeated until the carbonate layer is completely colorless. The ethereal solution is then again washed with distilled water, and when the layer of water has been drawn off the layer of ether is further extracted with two lots of 40 cc of tenth normal sodium hydroxide. After separation and rejection of the upper ethereal solution the combined alkali portions containing the theol are treated with 25 per cent sulfuric acid drop by drop until acid to congo red paper. This acidified aqueous solution is then extracted with two portions of 40 cc of pure "analytic" ether, after which the layers of ether are combined and washed with a little water. The ether extract is given another washing with 10 per cent sodium carbonate, and after the rejection of the alkali the remaining ether is freed from all trace of the alkaline carbonate by two more washings with distilled water. The final solution is transferred in two portions to a 50 cc transparent silica flask and the solvent is completely evaporated by immersing the flask in a large beaker of water previously heated to 70 C, the last traces of moisture are removed in vacuum by direct application of suction to the flask. The reagent used for the development of the color reaction of the dry residue consists of 36 parts of pure phenol with 56 parts of pure concentrated sulfuric acid (Cohen and Marrian). To obtain the color reaction 1 cc of reagent is added from the buret to the dry residue and the flask is immersed in a large water bath previously heated to about 70 C. By frequently rotating the flask the whole of the residue distributed round the sides is brought into the reagent, and the temperature of the bath is rapidly raised to boiling point and kept there for ten minutes. It is now cooled by holding the flask under a stream of tap water. While this cooling process is going on 1 cc of 5 per cent sulfuric acid is added slowly, the contents of the flask are kept moving in order to bring the somewhat syrupy reagent into a homogeneous solution with the dilute acid. The product, which is still yellowish

is then reheated in the boiling water bath for two and a half minutes. A positive reaction is obtained when the original color gradually changes over to pink or red, a negative when this change is entirely absent. Urines from sixty-five cases in which a pregnancy diagnosis was required have been examined by the test. In all except one case the result was in agreement with that of the Friedman reaction.

Glasgow Medical Journal

10 89 136 (Sept.) 1937

- Immune Globulin (Human) Lederle in Prevention of Measles Alice K Montgomery —p 89

Journal of Pathology and Bacteriology, Edinburgh

45 317 476 (Sept.) 1937

- Morphologic Studies on Vaccinia Virus Cultivated in Developing Egg F F Tang and H Wei —p 317
Clauberg's Tellurite Indicator Medium in Routine Diagnosis of *Corynebacterium diphtheriae* P L Sutherland and J L G Iredale —p 325
Some Observations on Types of *Corynebacterium diphtheriae* Found in Victoria Australia T S Gregory —p 333
Studies on *Corynebacterium pyogenes* with Especial Reference to Toxin Production R Lovell —p 339
*Changes in Central Nervous System Following Arsphenamine Medication Dorothy S Russell —p 357
Comparison of Growth Activating Effects on *Streptococcus* and *Lactobacillus* of Various Yeast Preparations Note on Use of Litmus as Indicator J G Davis —p 367
*Antibactericidal Effect of Certain Serums and Exudates W H Hughes —p 377
Megakaryocytic Myelosis with Osteosclerosis T F Hewer —p 383
Pheochromocytomas and Hypertension Details of Case D G F Edward —p 391
Blood Supply of Newly Developed Epithelial Tissue in Liver R D Wright —p 405
Effect of Ascorbic Acid (Vitamin C) on Toxin Production by *Corynebacterium diphtheriae* in Culture Mediums I J Kligler L Leibowitz and M Berman —p 415
Isolation of Bacteria Paratyphus B from Excreta of Patients Suffering from Paratyphoid Fever V Glass and H D Wright —p 431
Fatty Changes in Adrenal Cortex of Guinea Pigs After Unilateral Adrenalectomy H T Simmons and R Whitehead —p 441
Bacillary Dysentery in the Glasgow Area H S Carter —p 447

Changes Following Arsphenamine Medication—Russell describes three cases in which the administration of arsphenamines has been followed by the production in the central nervous system not only of perivascular and ring hemorrhages but also of perivascular nonhemorrhagic areas of necrosis and demyelination. In case 1 the demyelinated areas are infiltrated with phagocytes containing lipid granules, in case 2 there are also areas in which necrosis is unaccompanied by such infiltration, and in case 3 the nonhemorrhagic perivascular lesions are scanty and only of the noninfiltrated kind. The spinal cord was available for examination in cases 2 and 3. The white matter contained, in addition to hemorrhages, focal areas of degeneration and necrosis resembling early lesions in subacute combined degeneration. The suggestion that the nonhemorrhagic necroses represent a later stage of the hemorrhages is not supported by an examination of the three cases. The nonhemorrhagic foci were devoid of both red cells and hemosiderin, their presence in case 3, in which the terminal illness was extremely short, points to their production simultaneously with the hemorrhages. There were no transitions between the fresh hemorrhages and the anemic necroses. It is not denied that demyelination and aggregation of phagocytes take place at the centers of ring hemorrhages in the course of time, as has recently been described by Wolff. As he points out, however, red corpuscles persist in such areas, at any rate up to the eighth day after trauma. Again, from Baker's series and from the author's observations there is no evidence that anemic perivascular necrosis is a stage preceding hemorrhage. It appears more probable, from the longer survival periods in cases in which such necroses are conspicuous, that they represent a less severe form of damage to the tissues. They are, at any rate, an independent development. The perivascular distribution of the necroses and their association with fatty degeneration of the endothelium suggest that an increase of permeability has permitted the escape of some toxin into the surrounding tissues. The toxic factor in this encephalitis is unknown. It appears unlikely that arsenic as such is responsible, because chemical analysis has shown that the arsenic content of the brain in cases of arsphenamine encephalitis is lower than in cases in which death has been due to poisoning.

with inorganic arsenic. Moreover, hemorrhagic encephalitis is not a recognized complication of poisoning with inorganic arsenic. The effect produced by the arsphenamines may depend on the circumstance that the arsenic is administered in organic form. The incidence of hemorrhagic encephalitis seems to be independent of the size of the dose injected. It has frequently been suggested that the cerebral complications are due to the action of arsphenamine on syphilitic tissue—the so-called Herxheimer reaction. This explanation is, however, unacceptable, as the complication has been recorded in nonsyphilitic subjects. In case 2 there was no anatomic evidence of syphilis although a positive Wassermann reaction of the blood was obtained. It has also been suggested that the hemorrhagic encephalitis is due to sensitization. This possibility appears to deserve further attention. The resemblance between the histologic changes in case 1 and those that have been recorded as a rare complication of antirabic treatment may be significant when regarded from this angle, when it is remembered that the treatment consists of repeated injections of heterologous brain material. Finally the nonhemorrhagic lesions in case 1 resemble also those which occur in encephalomyelitis that may complicate vaccination, smallpox and measles. In none of these has the pathogenesis of encephalomyelitis been established, but the possibility that they are dependent on sensitization has been entertained on clinical grounds.

Antibactericidal Effect of Certain Serums and Exudates—From his studies of the blood serum of many common inflammatory conditions Hughes shows that all positive cases, that is, those in which a substance having an antibactericidal effect is present, are associated with some sort of reaction or inflammation and, when negative serums are found, the patients have either traumatic conditions, neoplasms or chronic diseases with little reaction. As regards temperature, the majority of the positive patients are febrile and most of the negative patients afebrile, but exceptions are present in both groups. Any generalization about the nature of the substance must account for its liberation by burns, high voltage roentgen therapy and various allergic conditions, as well as by bacterial disease. It is not therefore of bacterial origin nor is it histamine itself, since histamine injected subcutaneously does not liberate it. Two recent publications offer evidence that the substance may have other effects. Menkin showed that a toxin is present in the fluid from burns, in edematous fluid and in pleural effusions due to irritants, which toxin paralyzes the capillaries of the skin and increases their permeability to dyes present in the blood. Wilson and others have shown the presence of a substance in the edematous fluid of burns which is lethal to animals. The two papers agree on the heat stable nature of the substances concerned. The antibactericidal substance here described by the author resists heating to 60 C for two hours or even boiling. Wilson believes his toxin to be associated with the serum proteins, Menkin's is stated to pass through a semipermeable membrane. The antibactericidal substance will not pass through cellophane and is precipitated, at least in part, with the euglobulin fraction of the serum. There is rapid loss of activity *in vitro*. Its presence in so many different conditions raises the hope that it may be the common factor in inflammation and in the associated toxemia from whatever cause.

Lancet, London

2 555 608 (Sept. 4) 1937

- Pathways and Relief of Pain in Advanced Carcinoma of Cervix Uteri T. F. Todd—p. 555
- Technic of Somnifacient Narcosis D. Menzies—p. 559
- Bacteriologic Diagnosis of Whooping Cough Edith A. Straker and J. S. Westwater—p. 565
- Immunizing Fractions Isolated from *Haemophilus Pertussis* J. C. Cruickshank and G. G. Freeman—p. 567
- *Stable Ferrous Sulfate Mixture for Treatment of Nutritional Anemia in Young Children Helen M. M. Mackay and Lydia E. Jacob—p. 570
- New Type of Electrode for Use in the Fourth Electrocardiographic Lead D. Hall—p. 573

Ferrous Sulfate in Nutritional Anemia—The stable solution that Mackay and Jacob used in the treatment of nutritional anemia in twenty-six children consisted of 1½ grains (0.1 Gm.) of ferrous sulfate one-fourth minim (0.015 cc.) of dilute hypophosphorous acid 15 grains (1 Gm.) of dextrose and enough chloroform water to make 4 cc. The dextrose is

dissolved in some of the chloroform water and the dilute hypophosphorous acid is added. The ferrous sulfate is dissolved in some chloroform water and added to the dextrose solution and made up to volume with chloroform water. This mixture will keep for more than two months at room temperature without any precipitation. The mixture was given three times a day in 1 or 2 drachm (4 or 8 cc.) doses. It was always begun gradually, the full dose being reached in from three to five days. Given in this way, it was always well tolerated and there were no complaints of loose stools or colic. After about four weeks' treatment the weekly rise in hemoglobin of the children receiving 9 grains (0.6 Gm.) of ferrous sulfate duly averaged slightly higher than that of those receiving 4½ grains (0.3 Gm.), but the figures do not entitle one to say that 9 grains was a more effective dose, especially as the average time taken to reach 80 per cent was about the same in the two groups. In spite of good response to treatment—a rise of about 1 per cent daily in the early weeks—the average time taken to reach 80 per cent hemoglobin was about fifty days. The data indicate the need for continuing steady treatment for an average period of about two months, and a good deal longer in some cases. The presence of an intercurrent infection nearly always necessitates more prolonged treatment. During an intercurrent illness there is considerably more likelihood of a rise in hemoglobin level if a ferrous salt is administered rather than a ferric salt, and the response to iron treatment shown by several children with severe infections was striking. Though for therapy a ferrous salt has great advantages, for prophylaxis on a wide scale the cheap and stable iron and ammonium citrate is effective and well tolerated.

Medical Journal of Australia, Sydney

2 371 418 (Sept. 4) 1937

- Fractures of the Spine B. T. Edye—p. 371
- Treatment of Spinal Fractures D. J. Glissan—p. 376
- Functional Pathology of Anemia III Restoration Compensation Tolerance and Failure C. G. Lambie—p. 378

2 419 458 (Sept. 11) 1937

- Poliomyelitis M. L. Powell—p. 419
- Functional Pathology of Anemia IV Symptoms and Signs of Anemia C. G. Lambie—p. 423
- Accident Injuries and Compensation F. V. Smith—p. 433
- Case for Electrotherapy Notes E. P. Dark—p. 437

South African Medical Journal, Cape Town

11 557 596 (Aug. 28) 1937

- Anesthetics from a Specialist's Point of View C. Lipron—p. 559
- Anesthetics from the General Practitioner's Point of View G. F. Brown—p. 560
- Anesthetics from a Hospital Superintendent's Point of View A. J. Hugo—p. 561
- Anesthetics from the Surgeon's Point of View L. J. te Groen—p. 563
- Oxygen Therapy H. Grant Whyte—p. 565
- Use of Typhoid Endotoxin Vaccine in Treatment of Typhoid Fever Note E. Gras et al. and W. Lewin—p. 568
- Pneumococcus Typing Its Value in Pneumonia D. Ordman—p. 569

Japanese Journal of Obstetrics & Gynecology, Kyoto

20 337 436 (July) 1937

- Study of Effect of X-Ray Irradiation on Antibodies Parts I to VI Y. Kominami—p. 338
- Oxygen Dissociation Curve of Hemoglobin in Umbilical Blood of New Born Further Studies on Cases in Umbilical Blood III M. Noguchi—p. 358
- Female Sexual Hormones and Malignant Tumors Parts III and IV Y. Nitta—p. 368
- Experimental Study of Effect of Pituitary Hormones on Growth and Radiosensitivity of Malignant Tumor Parts I to IV K. Narimatsu—p. 387
- Pregnancy Sequent to Operation for Ectopic Gestation T. Mukuda—p. 427

Journal of Oriental Med., Dairen, S. Manchuria

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- Anatomic Changes of Thyroid Gland by Successive Administrations of Calcium Chloride S. Katura—p. 23
- Investigations on Anemia Caused by *Ancylostomiasis* Parts I to IV S. Ryo—p. 24
- Ichthyosis Vulgaris and Its New Method of Treatment Three Cases S. Nizawa—p. 29
- Basal Experiment for Improvement of Prophylactic Inhalation Substances Against Scarlet Fever G. Isiyama—p. 33
- Basal Experiment for Diluting Substance and Dose of Inhalation Substances Against Scarlet Fever in Childhood C. Isiyama—p. 34

Presse Medicale, Paris

45 1403 1418 (Oct 6) 1937

Serologic Method to Verify the Specific Properties of Urine and Blood of Cancerous Patients M Aron—p 1403
Reaction Mechanism of Gastric Mucin C Bonorino Udaondo and H Zunino—p 1405
Reaction of Para Amino Phenyl Sulfamide (Sulfanilamide) in Purulent Meningitis with Streptococci and Accessorily with Meningococci R Martin and A Delaunay—p 1406
Rheumatism and Their Treatment J Le Calve—p 1409

Specific Properties of Urine and Blood of Cancerous Patients—Aron points out that in previous reports (see also tract in THE JOURNAL, Aug 11, 1934, p 450) he demonstrated the presence of a specific principle in the urine of cancerous patients. By combining the urine of cancerous patients with 95 per cent alcohol he was able to obtain a precipitate which, when suspended in physiologic solution of sodium chloride and injected into rabbits, produced a characteristic reaction in the adrenal cortex of the animals. The author decided to make this principle in the urine the basis of a serologic test. He found that the blood of rabbits and dogs that were treated for a time with the urinary extracts from cancerous patients acquired a property by which, when injected into another animal, it immunized the latter against the same extract that otherwise produced the corticoadrenal reaction. Thus the specific substance in the urine of cancerous patients behaved like an antigen and stimulated the production of antibodies in the blood. The author obtains from a urinary extract, the so-called antigen, by alcoholic precipitation of the urine. Then he prepares the blood serum and in the antigen-serum mixture. Discussing the causes of error he stresses the importance of the careful cleansing of test tubes and the fact that inadequate centrifugation or dilution of the serum may lead to errors. In the interpretation of the reaction, two factors are essential: the first is a flocculation which seems to be related to the presence of an antigen and of specific antibodies, the second is an inhibiting action of the cancer serum on the nonspecific flocculation or precipitation. The question whether the method can serve as a basis for diagnosis must as yet be answered negatively. However, the method demonstrates a certain unity in cancerous conditions, which is opposed to the anatomic and histologic plurality presented by malignant tumors.

Action of Sulfanilamide in Meningitis—Martin and Delaunay, after reviewing the literature, stress the slight toxicity of sulfanilamide, pointing out that the toxic dose is from twenty to fifty times greater than the curative dose. The therapeutic efficacy of sulfanilamide impressed the authors especially in a case of purulent streptococcal meningitis. The patient, a boy aged 8, had an extremely severe meningitic action. Treatment with antimeningococcus serum proved effective. After the bacteriologic examination established the etiologic role of a hemolytic streptococcus, treatment with sulfanilamide was begun. Morning, noon and night the boy was given tablets of 0.5 Gm each by mouth. At first the daily dose of sulfanilamide was 1.5 Gm, but it was increased to 2 Gm and then to 3 Gm. Under the influence of this treatment, the extremely desperate case had a favorable outcome. The authors cite others who obtained favorable results with sulfanilamide in the treatment of streptococcal meningitis.

Schweizerische medizinische Wochenschrift, Basel

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Heliotherapy in Pulmonary Tuberculosis F Oeri—p 917
Antituberculosis in Tuberculosis P M Besse and K M Walthard—p 918
Influence of Work Therapy in Lowland on Course of Tuberculosis E Marti—p 919
Exercise and Rest in Treatment of Pulmonary Tuberculosis in High Mountain Sanatorium Voute—p 921
Experiences with Hydrotherapy in Tuberculosis Deiss—p 924
Experiences with Salt Free Diet H Stocklin—p 926

Exercise and Rest in Pulmonary Tuberculosis—Voute directs attention to the fact that, as the result of the prolonged activity and rest cure of the patient's with pulmonary tuberculosis their respiratory and circulatory organs become weakened. Training to counteract this weakened condition should be instituted under the guidance of a physician as soon as possible. The author accomplished this aim by beginning work therapy early and, in suitable cases by means of light indi-

vidual gymnastics combined with massage. When the work therapy is begun, the rest periods should be gradually reduced so that, when the patient is discharged from the sanatorium, he requires at the most two hours of rest daily.

Experiences with Salt-Free Diet—Stocklin says that about 10 per cent of the 170 tuberculous patients at his sanatorium are generally treated with the salt-free diet. He differentiates between an absolute and a relative indication for this treatment. The salt-free diet is absolutely indicated in renal tuberculosis, particularly if it is bilateral and complicated with tuberculosis of the bladder. In these patients it produces favorable results because of its high vitamin content. Together with methylene blue medication, the salt-free diet produces such good results in these patients that they themselves desire to continue it. For a similar reason, namely, to protect the kidneys, the author employs the salt-free diet also when gold preparations are given for long periods and in larger doses. There may exist a relative indication for the salt-free diet in pulmonary tuberculosis. The author employs it chiefly to exert a new stimulus in cases in which the organism has become inured to climatic and other influences. He resorts to it mostly in patients with severe bilateral processes in whom collapse therapy is impossible and psychic stimulation is necessary. In these cases it is usually given only for a few weeks, but in many cases it actually does have an alternative effect and is continued for several months. However, from time to time the patients are put back on an ordinary diet. If the salt-free diet is suitably prepared, it is usually well tolerated.

Archivio Italiano di Chirurgia, Bologna

46 361 458 (July) 1937

New Method for Surgical Treatment of Subcutaneous Inguinal and Abdominal Ectopy of Testicle G M Giuliani—p 361
Histogenesis of Nevose Tissues and of Melanotic Tumors P Maggio—p 417
Reflex Circulation of External and Internal Carotid Artery After Ligation of Primary Carotid Artery in Man B Simonetta—p 444

Histogenesis of Nevose Tissues and Melanotic Tumors—Maggio says that the melanoblasts are the cells concerned with the formation of melanin. They give a positive Bloch dopa reaction. Melanophores are the cells concerned with the transportation of melanin from melanoblasts to the skin. They give a negative Bloch dopa reaction. The origin of melanoblasts and melanotic tumors is not as yet clear. The author made microscopic studies in series of normal pigmented, pathologic pigmented and nonpigmented skin tissues and pigmented and nonpigmented tumors. He found that a displacement of epidermal cells to the dermis may take place in several physiologic and pathologic conditions of the skin. In the histogenesis of pigmented nevi the cells displaced from the epidermis suffer structural and protoplasmic changes up to a process of anaplasia into connective cells. The cells of blue nevi and those of the mongolian spots are connective melanoblasts. They are different from epithelial melanoblasts and from common melanophores. Connective melanoblasts cannot be differentiated from melanophores on the basis of their morphology. Connective and epithelial melanoblasts in a process of anaplasia, as they are found in malignant melanotic tumors of connective or epithelial origin, can be differentiated from melanophores. The latter in both cases act as typical phagocytic histiocytes. The author found in two melanotic tumors (a sarcoma from a mesodermal nevus and an epithelioma from basal cells) that dermal as well as epithelial cells may form melanin and contain a specific oxidase of the type described by Bloch. He concludes that melanoblasts may originate in specially modified epithelial or dermal cells and that there are two main species of cutaneous nevi: those of connective and those of epithelial origin.

Polichinico, Rome

44 1873 1920 (Oct 4) 1937 Practical Section

Intrajugular Injection in Adults C Canella—p 1873
Induced Pain of Nipple and of Areola as Sign of Pulmonary Tuberculosis M Mazzetti—p 1874
Jaundice After Operations on Stomach N Lagravinese—p 1879

Sign for Early Diagnosis of Pulmonary Tuberculosis—The sign described by Mazzetti consists in the production of more or less intense pain, which is elicited by pressure with the index finger on the nipple or the areola. The pain may

be elicited also by pressing the nipple or the areola between the thumb and index finger or by lateral traction of the nipple. When the nipple is moved aside and pressure is made on the subjacent intercostal space, pain is not produced or little pain is elicited. According to the author the pain is due to the development of viscerosensory reflexes, which originate in the parietal pleura near the tuberculous focus and also in the tuberculous areas of the lung. The sign is of practical value in early diagnosis of pulmonary tuberculosis, especially in the center or base of the lung. It is valuable also for determining the tuberculous lung in cases of hemoptysis in which it is necessary to establish an artificial pneumothorax or to administer drugs through the respiratory tract.

Riforma Medica, Naples

53 1299 1328 (Sept. 11) 1937

Elimination of Cervicic Acid Through Urine in Course of Jennerian Vaccination. A. Gugliucci—p. 1299

Tumors of Peripheral Nerves. Clinical and Histopathologic Study. E. Repetto—p. 1303

*Tuberculous Bacteremia. Investigation of Its Presence by Loewenstein's Method. I. Bosco—p. 1310

Tuberculous Bacteremia in Dermatoses.—Bosco investigated the presence of tuberculous bacteremia, as determined by Loewenstein's method, in a group of seventy-five patients suffering from tuberculous and paratuberculous diseases, especially dermatosis. The research included direct microscopic examination of smears prepared with centrifugates of the blood of the patients and culturing of the centrifugates in Loewenstein's medium. Negative results were attained in all cases. In a case of tuberculous epididymitis in a patient suffering from grave pulmonary tuberculosis, smears from the sputum stained with Ziehl's method and cultures of it in Loewenstein's medium showed abundant tubercle bacilli. Yet there was no bacteremia. The results of the author conflict with those reported by Loewenstein as to the existence of tuberculous bacteremia in tuberculous and paratuberculous dermatosis. Loewenstein's method is of value in culturing tubercle bacilli. It does not show bacteremia in tuberculous and paratuberculous diseases regardless of the localization or intensity of the disease. The tuberculous nature of a disease of unknown etiology cannot be ascertained by the results of Loewenstein's method. It is advisable to accept with reserve the appearance of positive or uncertain results because the latter may be erroneously interpreted as to the nature and significance of the organisms found in the cultures especially in microcultures. The organisms are not forms of tubercle bacilli, avian tubercle bacilli, tuberculous filtrable virus or mutating types of tubercle bacilli. In all probability they are remains of avian tubercle bacilli which are contained in the egg used in the preparation of Loewenstein's culture medium. The results of Loewenstein's method, which are positive in spring and negative in winter, as reported in the literature, may depend on epidemic fluctuations of avian tuberculosis in either season.

Semana Médica, Buenos Aires

44 689 744 (Sept. 23) 1937 Partial Index

Previous Pneumothorax in Surgery of Thorax. E. Finocchietto—p. 689

*Functional Systolic Murmur at Focus of Pulmonary Artery in Children. J. R. Diaz Nielsen—p. 691

Chronic Acid in Spasmodic Rhinitis. J. A. Cruciani—p. 706

Prevention of Measles. F. Bazan and E. Sujo—p. 716

Suboccipital Puncture. F. Games and D. Tieffenberg—p. 731

Hiccup. Etiology, Pathogenesis and Treatment. M. J. Alianak and L. J. Bermann—p. 733

Functional Systolic Murmur in Pulmonary Artery in Children.—Diaz Nielsen states that in some children with a normal cardiovascular apparatus a functional systolic cardiovascular murmur can be heard by auscultation over the pulmonary artery in the second or third left intercostal space. The murmur does not propagate. Its duration and intensity vary with individual conditions, especially those which result in increasing the velocity of circulation. The murmur is different from pathologic murmurs. It originates in a predominant functional factor. The organic factor, although of lesser importance, has to exist in association with the functional one in order to cause the murmur. The author found the murmur in eleven children with normal cardiovascular apparatus. Tele-roentgenography was performed in eight cases and radioscopy in three cases. Electrocardiograms were taken in all cases.

The time of velocity of circulation was determined in all cases by the dehydrocholic acid test. The average velocity of circulation was eleven seconds in a group of normal children and nine seconds in those who had functional murmurs. The author found that the systolic functional murmur is directly related to the increased velocity of circulation. It originates in the existence of a narrow infundibulum of the pulmonary artery. The growth of children improves the organic condition related to the infundibular abnormality, this results in a diminution of the functional disorder and, in many cases, in permanent disappearance of the murmur.

Archiv für klinische Chirurgie, Berlin

189 1744 (Aug. 30) 1937 Partial Index

Advances in Experimental Cancer Research. K. H. Bauer—p. 123

*Further Experiments with Tumor Formation. F. Sauerbruch and Knacke—p. 185

Ways and Treatment of Pseudarthrosis. G. Magnus—p. 191

End Results of Unrecognized or Improperly Treated Vertebral Fractures. K. Ebhardt—p. 212

Errors in Treatment of Fractures and Their Relation to Pseudarthrosis. E. W. Lexer—p. 216

*Animal Experiments on Wound Healing with Cod Liver Oil and the Effect of Its Components. W. Lohr and F. Unger—p. 405

Experimental Tumor Formation.—Sauerbruch and Knacke were impressed with the fact that young cancer patients exhibited with astonishing frequency disturbances of the sexual function. This was not necessarily associated with anatomic defects such as infantilism, hypoplasia of the genitals, cryptorchidism or atrophy of the testicles, but more commonly with functional disturbances such as irregular menses, deficient libido, frigidity, sterility in the married state and impotence. They have assumed in their animal experiments that the loss of sexual glands affected not only the specific sex function but also functions of a more general kind, namely, those which exercise a stimulating and building up effect on cell life, cell structure and cell growth. They further assumed that the loss of sex function was in itself sufficient to distort the ordinary processes of wound healing and of inflammation so as to give rise to uncontrolled and irregular cell proliferation. They have therefore abstained from the use of irritating cancer-producing substances and resorted to light traumatization, such as inflicting small wounds and injecting lactic acid or small doses of cholesterol. Rats were chosen because these animals develop tumors spontaneously in only 0.5 per cent. One group of normal rats was subjected to superficial traumatization, while in another group in addition to the same type of trauma castration or parabiotic union was practiced. In the last group of eighty animals, eight developed tumors which on microscopic examination by Rossle and Hamperl proved to be malignant. Five of these were associated with metastases. Of the forty animals in the first group, only one developed a tumor and that without metastases. The authors conclude that diminution or loss of the sexual function is one of the general predisposing causes of tumor formation. They found further that splenectomy in animals and in human beings leads to a marked increase of gonadotropic substance in the urine. There apparently exists the same interrelationship in the secretory activity of the spleen and the pituitary as between the latter and the sex glands. Castration creates a condition that favors tumor formation. The frequency of neoplasms in older people is related to the loss of the sex function. It is possible that the effect of gonadotropic substance on the cell metabolism is an important factor in carcinogenesis. There exists an interrelationship in the secretory activity of the spleen, the pituitary and the sex glands.

Cod Liver Oil in Healing of Wounds.—Lohr and Unger studied the effect of whole cod liver oil as well as of its single components, on healing of wounds in growing guinea pigs. A symmetrical defect in the skin of the animal, 1.8 cm in diameter, was made on each side of the back, one lesion being used as a control while the other was subjected to the action of the substance studied. The rate of healing and the appearance of the lesion and of the resulting scar were used as criteria. As a result of some 500 experiments the authors conclude that cod liver oil is effective in accelerating the healing of a wound. The effect of the vehicles of the various ointments into which cod liver oil is incorporated in proper concentration is indi-

ferent They have found that both vitamins A and D exert a favorable influence on the healing of wounds The unsaturated fatty acids present in cod liver oil as glycerides in the saponifiable components of the oil are themselves capable of stimulating the healing of wounds They become even more effective in the presence of nonsaponifiable elements of the oil in which there are contained vitamins A and D Concentrations of vitamins higher than those present in the natural state in the cod liver oil retard rather than accelerate the healing of wounds The stimulating effect of the components of cod liver oil on the healing of wounds has a general besides the local action, as manifested by the behavior of the untreated lesion on the opposite side The authors regard the stimulating effect of the vitamins on the healing of wounds in the nature of a catalytic stimulant of oxidizing cell processes This was found to be true of the individual components of the cod liver oil as well as of the combined effect of the vitamins and of the unsaturated fatty acids

Klinische Wochenschrift, Berlin

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*Size of Erythrocytes E Freerksen —p 1238
Porphyrins in Urine and in Feces E C Vighani and H Libowitzky —p 1243

*Contributions to Experimental Agranulocytosis G Krauel —p 1245
Determination of Physiologic Span of Saturation of Organism with Vitamin C T Baumann —p 1246

Size of Erythrocytes—Freerksen criticizes the existing methods of the determination of the diameter of the erythrocytes He shows that the customary methods of the preliminary treatment and measurement are too diverse to insure comparable and exact results Moreover, in measuring the size it is usually considered sufficient to determine the mean diameter, which he demonstrates as unreliable Another reason why the usual measurements of erythrocytes are unreliable is that there is no normal or basic measure available to which the results can be compared Because of this there is a tendency to ascribe too great importance to factors that can be deduced from the physiologic-chemical peculiarities of the plasma in the case under consideration Thus the fluctuations in the mean diameter of the erythrocytes of patients with diabetes mellitus has been ascribed to the acidosis The author studied the problem of the size of the erythrocytes from the anatomic point of view He demonstrates that in healthy persons as well as in patients the size of the erythrocytes is dependent on the size of the pertaining normoblasts and that changes in the size of erythrocytes, which have been detected in certain disorders, are unreliable, because they are based on the inexact mean diameter He emphasizes that in searching for changes in the size of the erythrocytes in diseases of the erythropoietic apparatus it is necessary to consider also the quantitative conditions in the bone marrow

Experimental Agranulocytosis—Krauel reports the history of a man, aged 26, who was hospitalized with the typical symptoms of agranulocytosis Fever, chills, sore throat and difficulty in swallowing had developed after the patient had taken a tablet of aminopyrine The examination of the blood revealed an agranulocytosis The anamnesis revealed that six years previously the patient had been treated with large doses of aminopyrine, on account of acute articular rheumatism Since then there had been no recurrences of articular pains and the patient had used no medicaments until he took the tablet of aminopyrine After the agranulocytosis and all its complications had been completely counteracted by blood transfusion and other measures, it was decided to determine by a test whether the aminopyrine had really caused the agranulocytosis The patient was given by mouth 20 mg of aminopyrine that is, only the fifteenth part of the usual tablet (0.3 Gm) This small dose elicited a noticeable general reaction with fever, weakness and cyanosis The blood picture showed a temporary decrease in leukocytes but the differential blood picture revealed no essential changes Taking into consideration the attack of agranulocytosis and the reaction elicited by the small dose of aminopyrine the case corroborates the opinion that agranulocytosis may be regarded as an allergic or anaphylactic disorder The author stresses that the experimental production of an agranulocytosis involves dangers and may cause serious complications

Medizinische Welt, Berlin

11 1267 1300 (Sept 11) 1937 Partial Index

Occupational Cancers with Especial Consideration of Their Prevention and the Law on Industrial Hazards O Teutschlaender —p 1267

*Menstrual Allergy G Singer —p 1273

Sprue and Vitamin Deficiency a Casuistic Contribution R Engel and Q Coudas Thompson —p 1277

Menstrual Allergy—Singer of Vienna points out that in some women there regularly recur in the course of the menstrual cycle severe disturbances of the type of the exudative or angioneurotic diathesis The essential character of these periodic attacks corresponds to that of the allergic diathesis In addition to the individual predisposition, such substances as cholesterol and histamine, which during the menstrual cycle reach the blood in larger quantities, play a part as antigens However, another regularly existing factor is a usually acquired hepatic disorder The liver, which is nearly always involved in allergic disorders, has the central position among the causal factors of the allergic disturbances that are of menstrual origin The prophylaxis and therapy of the menstrual allergic attacks must take into consideration all processes that influence the function of the liver The author stresses dietetic measures, particularly the restriction of animal proteins and fats and a liberal provision with carbohydrates Further he recommends the use of Vichy or Karlsbad water and medication with dry peptone, from 0.5 to 1 Gm of which should be given one hour before each meal In addition to measures that influence the liver directly, he stresses the importance of regulating the gastro-intestinal tract and thus indirectly protecting the liver for instance, achylia and constipation should be counteracted The prophylactic treatment should be intensified during the premenstrual period Beginning with the fourth day before the onset of the menstruation, the patient should eat no meat at all, and the vegetable proteins likewise should be restricted If prodromal allergic symptoms appear, a bile acid preparation and concentrated sugar solutions are advisable These measures and thorough evacuation of the bowel will either prevent or reduce an allergic attack The author observed that, when the dietetic and medicinal measures were continued for several months, the predisposition to the allergic attacks was usually reduced so that eventually the attacks ceased entirely

Wiener klinische Wochenschrift, Vienna

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Principle of Disburdening in Treatment of Severe Heart Disease K F Wenckebach —p 1315

Pediatrics and Vitamins W Kollath —p 1317

Spectral Analytic Demonstration of Metals in Tissues W Schwarzer —p 1321

Intensified Treatment of Uncomplicated Gonorrhea of Genital Mucosa H Fuhs —p 1323

Cartilago Centralis Carpi in Human Subjects H Schneider —p 1326

*Changes in White Blood Picture During Swimming H Kellner —p 1329

Treatment of Adder Bites G H Bartsch —p 1332

Treatment of New Eye Injuries by Practitioner W Kreibitz —p 1334

Changes in White Blood Picture During Swimming—Kellner examined the white blood picture of trained swimmers before and after swimming and found that it regularly undergoes changes The changes are noticeable especially after rapid swimming over a long distance There always develops a leukocytosis, in which the lymphocytes participate more strongly than the neutrophil leukocytes In the course of the first hour after swimming, the leukocytosis subsides again, during this decrease in the total number, the initial increase in lymphocytes is replaced by an increase in the polymorphonuclear leukocytes, which in the differential count reveals a slight deviation to the left

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Influence of Tryptophan and Histidine on Gastric Ulcer—Furth and Scholl state that in earlier studies they were able to corroborate the observations of Weiss, Aron and Holtzmann, namely that the cure of artificially produced gas-

tric ulcers can be accelerated by means of tryptophan. Of thirty-two large dogs in which gastric wounds had been produced by the excision of small areas of the mucosa, fifteen were treated with injections of tryptophan, two with histidine and one each with glutamic acid, aminoacetic acid and alanine. It was found that tryptophan greatly accelerates the healing process of the artificial wounds of the gastric mucosa. Of the two dogs that were treated with histidine, one gave a positive and one a negative result. The animals that were treated with the other substances gave either negative or doubtful results. The authors further investigated whether these substances exert an influence on true gastric ulcers, that is, on ulcers that were produced by the injection of histamine. After much experimentation, a suitable method was developed by which histamine injections elicited gastric ulcers in guinea-pigs. Whereas the animals that were treated only with histamine developed gastric ulcers, the simultaneous administration of tryptophan prevented the development of such ulcers. Histidine proved much less effective than tryptophan.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

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Gastroduodenal Perforation—Sosnyakov reports 121 cases of perforation of gastroduodenal ulcer observed in the third surgical clinic of the Leningrad Medical Institute since 1931. The perforations were localized in all their cases on the anterior wall of the stomach or the duodenum. They have noted one instance of perforation on the greater curvature and five in the cardiac region. Eighty-one of the cases occurred during spring and autumn. Only 4 per cent of their patients were women. History of ulcer was present in 72 per cent. Among twenty-seven necropsies on patients who had died of perforation, there were found nine instances (33 per cent) of multiple ulcers with a perforation of one of them. Absence of liver dulness was observed in 56.2 per cent, sudden onset of pain was exhibited in 95 per cent, boardlike rigidity of the abdominal wall in 92 per cent and localization of the pain under the xiphoid process or somewhat to the right in 90 per cent. Roentgenoscopy was resorted to in only two cases. Vomiting was present in 27.3 per cent. The peritoneal exudate in the first six hours of perforation is usually sterile. Here gastric resection is indicated, provided the general condition of the patient is satisfactory. After twelve hours the peritoneal exudate contains a mixed bacterial flora with the predominance of colon bacilli. Here simple and brief operative procedures are indicated. Perforation was closed by suture alone in twenty cases, while in ninety-eight (81 per cent) a gastro enterostomy was added. The peritoneal exudate was removed with dry tampons. The mortality rate was 22.3 per cent. Of fifty-five cases followed up and examined roentgenoscopically, 71 per cent gave excellent, 21 per cent satisfactory and 8 per cent poor results. The author concludes that the lapse of time between the perforation and the operative intervention is the deciding factor in mortality. Simple suture of the perforation with or without gastro enterostomy gives satisfactory immediate as well as late results.

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

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- Meningitis and Similar Disturbances H W Stenvers—p 4549
 *Influence of Body Posture on Form of Electrocardiogram A D Erkelens—p 4557
 Saltaam Convulsions J J H N Klessens—p 4566
 *Laboratory Rats as Source of Infection with Leptospira of Weil's Disease G Korthof—p 4571

Influence of Body Posture on Electrocardiogram—Erkelens made electrocardiographic tests on sixteen patients with heart disease and on forty-five persons without cardiac defects. The tests were made first while the persons were reclining and then while they were standing up. Three leads

were taken. The author discusses the changes that were observed after the patients stood up. The most frequent changes were enlargement of the P wave in the second and third leads, reduction of R₁, enlargement of R₂, deepening of S₁ and reduction of T in all leads. The author directs attention to the discordance, which exists in many cases, between the changes in the QRS complex and in the T wave, which disproves the suggestion that the changes in the T wave are caused by positional changes of the heart. He cites factors indicating that the reduction of the T wave in the second and third leads is the result of an inadequate blood supply of the heart muscle when the person is in the erect posture. This decrease was observed in healthy persons as well as in patients with cardiac defects and therefore is of no value in the diagnosis of myocardial disease. There were indications that the type of body structure has an influence on the electrocardiogram.

Laboratory Rats as Source of Infection with Weil's Disease—Korthof reports the history of a man, aged 21, who presented the symptoms of Weil's disease. The patient's serum showed agglutination with Leptospira, and animal experiments with the patient's urine revealed the presence of the leptospira of Weil's disease. The patient had not been in contact with wild rats but had taken care of white rats in the laboratory. Although he had not been bitten by the white rats, it was considered possible that he had been infected by them. A number of the several groups of rats that were kept at the laboratory were examined. The most simple and reliable method for the demonstration of the infection in the white rats proved to be the examination of the blood for agglutinins against the leptospira of Weil's disease. In the first group of rats the agglutination test proved positive, whereas in two other groups it gave negative results, that is, the first group of rats was evidently infected. For the demonstration of Leptospira, the culture on renal material proved more simple and reliable than the inoculation of guinea-pigs.

Ugeskrift for Læger, Copenhagen

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- *Clinical Study on Course of Pregnancy, Delivery and Puerperium in Adipose Primiparas E Møller Christensen—p 965
 Abduction Splints O Raagaard—p 970
 Diseases of Skin and Mucous Membranes as Early Tuberculous Manifestation (Erosive Pluri-orificial Ectodermosis?) W T Andersen—p 973
 Eosinophilia as Forerunner of Skin and Mucous Membrane Reactions During Treatment with Sanocrysin S Thomsen—p 975
 Weltmann's Serum Coagulation in Pulmonary Tuberculosis J Sigurdson—p 977

Pregnancy in Adipose Primiparas—Møller-Christensen tabulates the results of his investigations in 242 adipose primiparas and 500 primiparas of normal weight. He finds that the overweight primipara and her fetus are threatened by far more frequent and more serious complications. He states that prophylaxis should be begun before pregnancy by reduction of weight under medical supervision, preferably only by diet and exercise, a possible thyroidin treatment to be administered by the physician with great care and with the possible pregnancy in mind. If pregnancy has begun, prophylaxis is to be continued by diet and exercise exclusively, the diet to be abundant in vitamins and minerals and to contain about 2,000 calories. The weight should be controlled at least once a week during the entire pregnancy, in the first four months of the period the weight should increase but slightly, in the last half of pregnancy, not to exceed 1,000 Gm in two weeks. Regular examinations of urine and blood pressure are a matter of course. Whenever in the last two months of pregnancy the fetal weight is estimated to be about 3,000 Gm, attempted medically induced premature labor is advocated. The author says that by Huch's method (injections of small doses of solution of posterior pituitary together with quinine by the mouth), which is safe for mother and child, premature delivery can be induced in about 60 per cent of the cases. When the method fails, nature must usually be allowed to take its course, and only as a last resort should dilation according to Hegar or Bossi be done followed by puncture of the membrane. In adipose primiparas with large fetuses cesarean section may be advisable if no contraindications for other reasons are present, but, as in all other operations in overweight women, there is greater risk in cesarean sections in these women.

